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Big Sky Clearwater

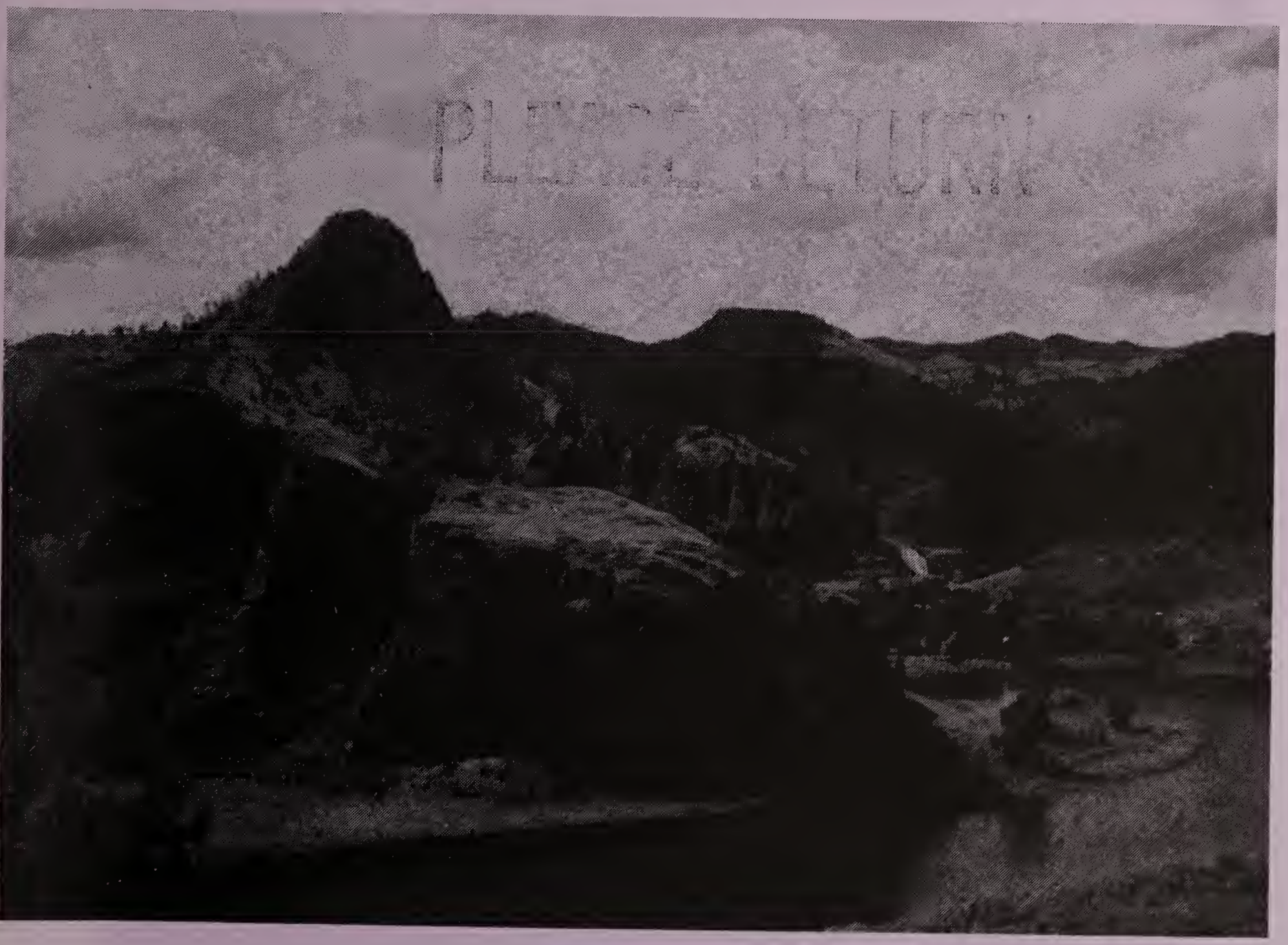
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SPRING 1994

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If you have any ideas or information that you would like to pass along to other people involved in the water and wastewater field, please don't hesitate to contact the Water Quality Bureau. This publication welcomes articles of interest and random pieces of information regarding anything to do with water.

An article may consist of your own thoughts and ideas about something you may have experienced. Perhaps such information could help someone else in their day-to-day work. It could also be a technical article that is developed from research information and library resource material. If it has to do with water and you think it may be of interest, give us a call at (406) 444-2406.

If you do not wish to continue receiving this publication, please send us your name and address so that we may remove your name from our mailing list...thanks.

Water Quality Bureau
Department of Health & Environmental Sciences
1400 Broadway
P. O. Box 200901
Helena, Montana 59620-0901

Cover: *A scene from a popular Montana Highway. If you can guess where the location is, you can win a free issue of Big Sky Clearwater. Contact Bill Bahr with you entries.*

The *Big Sky Clearwater* is for water and wastewater operators across Montana. It is published two times a year by the Water Quality Bureau of the Montana Department of Health and Environmental Sciences in cooperation with the Montana Section of the American Water Works Association and the Montana Water Environment Association.

Publication dates: February 1 and August 1. Last date to receive contributions is 30 days before publication.

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WATER AND WASTEWATER OPERATOR CERTIFICATION NEWS

by Shirley Quick, Certification Officer, WQB

A New Face at the Certification Office

You are probably asking yourself, what happened to **Rosemary Fossum** and who is **Shirley Quick**? To answer the easy part first, Rosemary was fortunate enough to retire at the end of September, 1993. Rosemary WAS the certification office for 16 years and she is missed by everyone at the WQB, especially by me!

As for Shirley Quick: Before starting at the WQB in mid-November, 1993, I worked at the DHES Air Quality Bureau for nine years as a computer operations technician managing their ambient air data. I am excited to take on this new challenge and look forward to meeting all of you in the future.

A big THANKS to all of you who have been patient during this busy transition period, and we ask for your continued patience until the certification office gets back up to speed.

Continuing Education Credit (CEC) Deadline is June 30, 1994!

REQUIRED CECs:

CLASS I
Water = 2
Wastewater = 2
CLASS II, III, or IV
Water = 1
Wastewater = 1
CLASS V
Water = .4
Wastewater = None

For example, if you are certified as Class 1A2B3C, you must earn 2 water treatment CECs (the higher class CEC specifications apply), and 1 wastewater CEC for a total of 3 CECs.

If you are not sure what your CEC status is or if you have any questions, please call me at 444-2691. We hope to be able to send out a status report to all certified operators at the end of the next two year period, but the computer system still has some bugs to have worked out before then.

CEC information to remember:

1 CEC = 10 hours of training. Courses must be reported on a Credit Report Form which has the signature of the instructor or a certificate of completion submitted with the form.

CECs are not required for renewal of certification for Operators-in-Training.

Operators who earned full certification in odd-numbered years will not be required to earn CECs until the following two year period.

A surplus of CECs earned during one biennium cannot be applied to the following biennium.

Courses not listed in the METC bulletin may be approved for CEC if the Application for Approval of Training for CEC is received and deemed applicable by the WQB **BEFORE** the course takes place.

Water and Wastewater Operator Certification Advisory Council News

Due to health reasons, the Council had to say an early goodbye to **Jim Worthington**, who retired as the Director of Public Works for the City of Laurel. Thank you, Jim, you will be missed.

Advisory Council News (cont.)

The Council welcomes two new members that were appointed by the Governor's office: **Warren Jones, Ph.D.** and **Curt Myran.** Warren is a professor in the Civil/Agriculture Engineering Department at Montana State University in Missoula. Warren meets the requirements specified in MCA 2-15-2105(C) which states "one member serving on the faculty of a university or college whose major field is related to water supply systems, wastewater treatment, chemical or civil engineering, chemistry or bacteriology."

Curt is the Director of Public Utilities for the City of Miles City and has been a certified operator since 1985. Curt meets the MCA 2-15-2105(D) requirements: "one member who is a representative of a municipality required to employ a certified operator and who holds a position of either city manager, city engineer, director of public works, works manager or their equivalent."

What Do Those Funny Letters and Numbers Mean on Your Renewal Cards?

WD-6 WT-1 WWN-6 WWI-0 No. 6666

STATE OF MONTANA
CERTIFICATION FOR
WATER AND WASTEWATER OPERATORS

JANE DOE

is a certified operator under MCA 37-42-101 to 37-42-323
and ARM 16.18.101 to 16.18.210

EXPIRES: **06/30/94**
ANNUAL FEE: **$60.00**

State Department of Health and Environmental Sciences

OPERATOR ID: 6666

FULL CERT: WT-1
TRAINING: WD-6 WWN-6

JANE DOE
123 WATER WAY
PLENTYWOOD, MT 59254

EXPIRES: 06/30/94
ANNUAL FEE: $60.00

TOWN OF PLENTYWOOD

SYSTEM NAME	PWSID	MPDES	TYPE
PLENTYWOOD WATER DEPART	00306	0580008	M

WD Water Distribution (also known as A)
WT Water Treatment (B)
WWN Wastewater Non-industrial (C)
WWI Wastewater Industrial (D)

1 through 5 Operators class 1 through 5.
6 through 9 **Operators-in-training** class 1 through 4 (add 5 to the class number for which you are training).

Operator ID A four digit number; On some forms you might see a five digit number with a nine as the first digit. Your number is represented by the last four digits. The computer uses a nine to distinguish operators from others in our database program. Try to have your number ready when calling the certification office or attending a CEC training session. This will help us find your information or credit your record correctly.

Your name Your name should be spelled right. If it isn't, please call or write.

Expiration date Your certification will expire on this date. Certification lasts for one year. You must pay the renewal fee to retain your certification. If you do not renew before this date, you risk revocation of your license.

Annual Fee This is the amount you paid to become certified for this year. The fee is thirty dollars for a WD or WT license and thirty dollars for a WWN or WWI license. There is a maximum fee of sixty dollars for water and wastewater licenses.

Your Address, System Name, Public Water System ID number, Montana Pollution Discharge Elimination System number, Type of system.

[Thanks to **Paul Montgomery** for his help in writing this article.]

PASSING EXAMINATIONS FOR FULL CERTIFICATION OR OPERATOR-IN-TRAINING (OT) 10/1/93

Class 1:

Leslie Anderson, Havre, 1Aot 1Bot
Mary Armstrong, Glasgow, 1B
David Dunlop, Great Falls, 1A
Scott Gilden, Havre, 1Bot
Henry Hayes, Wolf Point, 1A 1B
Mel Kershaw, Helena, 1B
Henry Lindgren, Billings, 1B
Michael McCann, Havre, 1Aot 1Bot
David Mell, Bozeman, 1B
John Peterson, Glasgow, 1B
Christine Poppe, Bozeman, 1Bot
Alan Rominger, Bozeman, 1A
William Shields, Butte, 1Cot
Ira Woods, Kalispell, 1Cot

Class 2:

Travis Dolphin, Polson, 2B
Larry Gersch, Helena, 2C
Roger Giesy, Glacier, 2B
John Heffernan, Missoula, 2A3Bot
Randy Higgins, Glacier, 2B
John Peterson, Glasgow, 2A
Stephen Profrock, Cut Bank, 2Aot
Delmar Teidemann, Anaconda, 2A3B
Thomas Whalen, Glacier, 2Bot
Kevin Whittenburg Thompson Falls 2B

Class 3:

James Brown, Malta, 3C
Alonzo Crawford, Superior, 3Cot
John Duncan, Decker, 3A4B
William Dunham, Whitefish, 3A4B 3C
Wayne Ellington, Missoula, 3C
Robert Evanoff, Gardener, 3C
Wendell Ewan, Three Forks, 3A4Bot
Lynn Gieschen West Yellowstone 3A4B
LeRoy Godin, Superior, 3Cot
Glen Howlett, 3C
Eugene Hungerford, Whitehall, 3A4B
Daniel Ireland, Superior, 3C
Phillip Lauman, Somers, 3Cot
Patrick Metzger, Superior, 3Cot
Ronald Nusbaum, Absarokee, 3A4Bot
Ernest Olson, Glacier, 3A4Bot
John Peterson, Glasgow, 3C
George Prehn, Corvallis, 3C
Seldon Reum, Polson, 3C
James Ridenour, Red Lodge, 3A4B
David Rinaldo, Decker, 3A4Bot
Rodney Sabol, East Helena, 3A4B
Robert Seaman, Harlem, 3A
Earl Stagg, Boulder, 3A4B
Roger Wasley, Superior, 3Cot
Thomas Whalen, Glacier, 3Aot 3Cot
Kevin Whittenburg Thompson Falls 3C

Class 4:

William Bovee, Clancy, 4ABot
Michael Buechler, Fromberg, 4ABot
William Croft, Roberts, 4ABot
Fred DeRoche, Heart Butte, 4AB
John Duncan, Decker, 4C
Wendell Ewan, Three Forks, 4Cot
Michael Faughn, Hamilton, 4AB
Terrance Fox, Whitefish, 4D
Larry Gertz, Bigfork, 4AB
Gerald Heiser, Shepherd, 4AB
Franklin Iron Heart,Heart Butte 4ABot
Robert Johnston, Warm Springs, 4C
Henry Lindgren, Billings, 4A
Douglas Martin, Dutton, 4ABot
Daniel Murphy, Warm Springs, 4AB
Tommy Nielsen, Grass Range, 4AB
Grant Noonkester, Laurel, 4AB
Laurie Noonkester, Laurel, 4AB
David Rinaldo, Decker, 4Cot
Merlin RunningCrane,Heart Butte, 4AB
Ron Skinner, Bozeman, 4AB
Leo Smetana, Clancy, 4ABot
Sylvia Ypma, Manhattan, 4ABot

Class 5:

John Craver, Libby, 5AB
John Johnson, Bozeman, 5AB
Leo Olson, Bozeman, 5AB
David Young, West Yellowstone, 5AB

DEPARTMENT OF
HEALTH AND ENVIRONMENTAL SCIENCES
WATER QUALITY BUREAU

ROOM A-201
1400 BROADWAY

STATE OF MONTANA

PHONE: (406) 444-4549
FAX: (406) 444-1374

PO BOX 200901
HELENA, MONTANA 59620-0901

EXAMINATION NOTICE

IN SEVEN LOCATIONS -- SATURDAY -- MARCH 19, 1994-----9:00 A.M.

Examinations for certification as a Water Distribution Systems Operator, Water Plant Operator, and Wastewater Plant Operator will be given at these seven* locations:

BILLINGS	**Eastern Montana College; McMullan Hall; Room 303 (change from earlier notice)**
HAVRE	**Northern Montana College; Hagener Science Center; Room 103-104**
HELENA	**Cogswell Building; 1400 Broadway; Room C209 (use south side entrance)**
KALISPELL	**TENTATIVE LOCATION*: Kalispell Wastewater Treatment Plant; 2001 Airport Road; Conference Room (south end of city airport)**
LEWISTOWN	**Yogo Park Inn; Sapphire Room**
MILES CITY	**Miles Community College; 2715 Dickinson; Room 106 (main building)**
MISSOULA	**Holiday Inn; 200 South Pattee Street; Jenkins Room**

*Note: There will NOT be an examination in Great Falls since the Spring Water School is taking place in Lewistown. Please call 444-2691 to confirm the Kalispell location.

By March 4, as required by ARM 16.18.204, everyone taking examinations must have:

- ☐ Completed an application for certification as a water/wastewater operator.
- ☐ Paid application (or renewal) fees for fiscal year 94 which ends 6/30/94.
- ☐ Submitted examination registration slips and fees of $5 per examination. (Combination examinations 2A3B, 3A4B, 4A4B and 5A5B require $5 examination fee only.

APPLICATION FEES ARE: $30 for either or both water distribution or water treatment type and classification; and $30 for any wastewater type and classification.

To request application materials, order study materials, or ask for additional information, call the certification office at 444-2691 or write:

Water/Wastewater Operator Certification
Water Quality Bureau - P.O. Box 200901 - Helena 59620-0901
PLEASE RETAIN THE UPPER PORTION OF THIS NOTICE

EXAMINATION REGISTRATION SLIP

(Detach and return with $5 per examination by March 4, 1994)

I will take the examination(s) I have checked below at:

____Billings _____Havre _____Helena _____Kalispell _____Lewistown _____Miles City ____Missoula

	1	2	3	4	5
A - Water Distribution	____	____	____	____	____
B - Water Plant	____	____	____	____	____
C - Wastewater Plant	____	____	____	____	

NAME: _____ **SYSTEM:** _____

ADDRESS: _____

"AN EQUAL OPPORTUNITY EMPLOYER"

MATH REVIEW FOR CERTIFICATION EXAM

Sponsored by

WATER QUALITY BUREAU
March 18, 1993
6:30 - 9:30 pm

1. BILLINGS
Eastern Montana College
McMullan Hall, Room 303
(change from earlier notice)

2. HAVRE
Northern Montana College
Hagener Science Center
Room 103-104

3. HELENA
Cogswell Building
1400 Broadway
Room C209
(Use Broadway entrance)

4. KALISPELL*
TENTATIVE LOCATION
Kalispell Wastewater Treatment
Plant Conference Room
2001 Airport Road
(south end of city airport)

5. LEWISTOWN
Yogo Park Inn
Sapphire Room

6. MILES CITY
Miles Community College
2715 Dickinson, Room 106
(Main building)

7. MISSOULA
Holiday Inn - Missoula Parkside
200 South Pattee
Jenkins Room

♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣♣

These sessions are intended to review basic math with those people taking exams on March 19. The review will begin at 6:30 pm.

*The Kalispell math review is sponsored by Montana Rural Water and is being held from March 16-18; for more information and to confirm location call 454-1151.

Please call for more information from Shirley Quick, Water/Wastewater Certification Office, Water Quality Bureau, 444-2691.

Have We Become Too Casual About Microbial Contamination

Beth Cahape
NDWC Staff Writer

Although Milwaukee's Cryptosporidium outbreak will undoubtedly be the drinking water story of the year, water system operators and managers need to be mindful of more than just this particular microbiological contaminant. This first in a series of articles examines the risk microbiological contaminants pose to the public health and the extent of their occurrence.

This article was prepared with the assistance of Senior Microbiologist Paul Berger, Ph.D., who works in the U.S. Environmental Protection Agency's Office of Ground Water and Drinking Water.

At a regional conference for small water system operators a few years ago, there was a general discussion of various U.S. Environmental Protection Agency (EPA) drinking water standards. When the talk turned to the requirements of the Total Coliform Rule, one operator rose from his seat and shared with the rest of the attendees a way to "get around this requirement." Incredibly, the audience then listened to their colleague tell them how to alter their samples so that the test results--no mater how contaminated the sample might be--would be found "safe" when tested in a lab.

Undeniably, there are times when it may seem to be nearly impossible for a small water system to keep track of, and comply with, all the current and upcoming regulations for drinking water. But the information that operator shared reflected an attitude toward federal and state requirements that almost certainly would endanger the health of his community.

As informed system operators and managers know, microbiological contamination--also called microbial or microbe contamination--represents the most likely health threat a community's water system might encounter. While it should be noted that any tampering with samples can be readily detected by a suspicious regulator and a competent lab, uninformed or careless attitudes toward microbial contamination are still all too common.

Epidemics: Past and Present

Until the beginning of this century, Americans regularly suffered through a series of cholera and typhoid epidemics. With its terrible mortality rate, cholera easily became known as the most feared epidemic disease of the nineteenth century.

Both diseases, caused by sewage infiltrating drink water, were ultimately controlled in this country, with the discovery of chlorine as a disinfectant. Also instrumental in the control of waterborne disease (illness caused by drinking water) was a 1912 act passed by Congress that authorized the U.S. Public Health Service to oversee and protect the nation's public drinking water supplies.

According to one public health engineer, "The increase in the average life span is largely due to the near elimination of life-threatening waterborne disease by developments in the treatment of drinking water and sewage, not in the cure of disease once it has struck."

Indeed, we have seen the tragic results of neglecting careful water treatment in South and

Central America over the past three years. Traced to its January 1991 beginnings in Peru, the recent cholera epidemic has caused more than 5,000 deaths from the more than 500,000 reported cases in South and Central America.

"We should not allow ourselves to be complacent," adds the public health engineer. "We cannot overlook the fundamental importance of disease prevention by water system operators."

A Low Priority?

With the exception of a few very limited cholera outbreaks in communities along the Mexican border, we don't really have to be concerned about this terrible waterborne disease in this country anymore. But have we become complacent in our attitudes toward the treatment of microbiological contaminants?

It has been argued that a casual attitude toward regulation of microbes has been caused, in part, by EPA's own emphasis on chemical contaminants. In a recent editorial from Waterworld Review, editor Paul Hersch criticized this country's current drinking water priorities, saying that maximum contaminant levels (MCLs) are "set not by what matters, but what can be measured...the tight MCLs on many organics presumably are intended to prevent one death among 10,000 after 70 year's exposure. In contrast, the population regularly is exposed to waterborne biological affliction--some of it costing lives."

Detailing the final statistics from Milwaukee's Cryptosporidium outbreak this last April, Hersch says that "...the Milwaukee event may be notable for the numbers afflicted, but the scourge managed by Cryptosporidium in not a rare event."

More Serious Than Chemicals?

There are many scientists in the drinking water field who believe that microbiological contamination may represent the most serious health threat to our drinking water. Paul Berger, a senior microbiologist with EPA's Office of Ground Water and Drinking Water, is one such scientist.

"If you take a look at waterborne disease," says Berger, "the great majority are caused by microorganisms as opposed to chemicals. The data from all reported waterborne diseases from 1986 to '88 supports this. With the 25,846 people who actually got sick, only 103 were exposed to a chemical hazard," he says.

"While the vast majority of people suffering from waterborne diseases caused by microbes recover quickly, deaths do occur. Some data suggest that the number of deaths from microbes in water is much higher than that from cancers caused by chemicals in the water. There are people," explains Berger, "who say that the degree of harm [from waterborne disease] from both the exposure and illness is usually self limiting. They say that you get better soon and these contaminants are not like the chemicals that can cause cancer. This is true. But in some parts of our population--in every community--there are people who are at special risk."

Who's At Risk?

"Microorganisms," continues Berger, "can cause an acute effect with a single exposure. Usually the effect is just temporary, but for many of the aged, infants, and those with

immuno-deficiencies [weakened immune systems] like that caused by AIDS, these contaminants can be life-threatening. A healthy individual may not be affected, but these [high-risk] people are seriously affected.

"For example, in Missouri in 1989," says Berger, "four people died of E. coli. Even Hepatitis A, a viral infection that causes waterborne epidemics, has some mortality associated with it. And recent research on AIDS suggests that Crytosporidium is associated in some manner with the death of AIDS patients."

However, people with weak immune systems represent more than the many thousands afflicted with AIDS. Those most vulnerable to microbial contamination can include individuals in the end stages of a number of serious illnesses, such as heart and kidney disease. Cancer patients undergoing radiation therapy, no matter how serious their conditions, are also vulnerable because their immune systems are weakened by this treatment."

"The elderly are vulnerable," adds Berger, "because their immune systems begin to weaken. In infants, the immune system is not mature enough to withstand an attack by disease-causing microorganisms."

Outbreaks not Recognized

One of the problems with illnesses caused by waterborne microbiological contamination is that the vast majority of cases go unreported. The acute gastrointestinal symptoms (e.g., diarrhea and vomiting) that people typically get when they are exposed to these contaminants are very much like a case of influenza, or "stomach flu." Because of this, people usually don't seek medical treatment.

Even when symptoms are more severe and an individual sees a physician, that physician generally has no immediate way to determine that his or her patient's condition is the result of drinking contaminated water.

"Most waterborne disease is not recognized as being waterborne," says Berger. "Unless a doctor suspects it is caused by this source, or unless doctors are alerted to the possibility by their public health department, it is likely to go unreported."

Berger cites the 1987 waterborne Cryptosporidium outbreak in Carrollton, Georgia, as an example: "Some 13,000 people became ill, and yet it would have gone completely unnoticed had it not been identified by a sharp nurse who began looking at the situation more closely. She was the one who put it all together."

It's still not possible to say exactly how many outbreaks might actually be taking place, but some studies provide an idea. In Colorado, state health officials hired a consultant to look through their records for cases of waterborne disease outbreaks. After studying 18 months of state medical statistics, the consultant determined that there were more than three times as many cases occurring had actually been reported.

"In 1985, the Centers for Disease Control interviewed their various departments," adds Berger, "to get a better idea of the extent of diseases per year. They actually estimated 940,000 cases per year of waterborne disease due to drinking water. They also attributed approximately 900 deaths per year to waterborne illness."

FROM THE METC COORDINATOR. . .

Jan Boyle

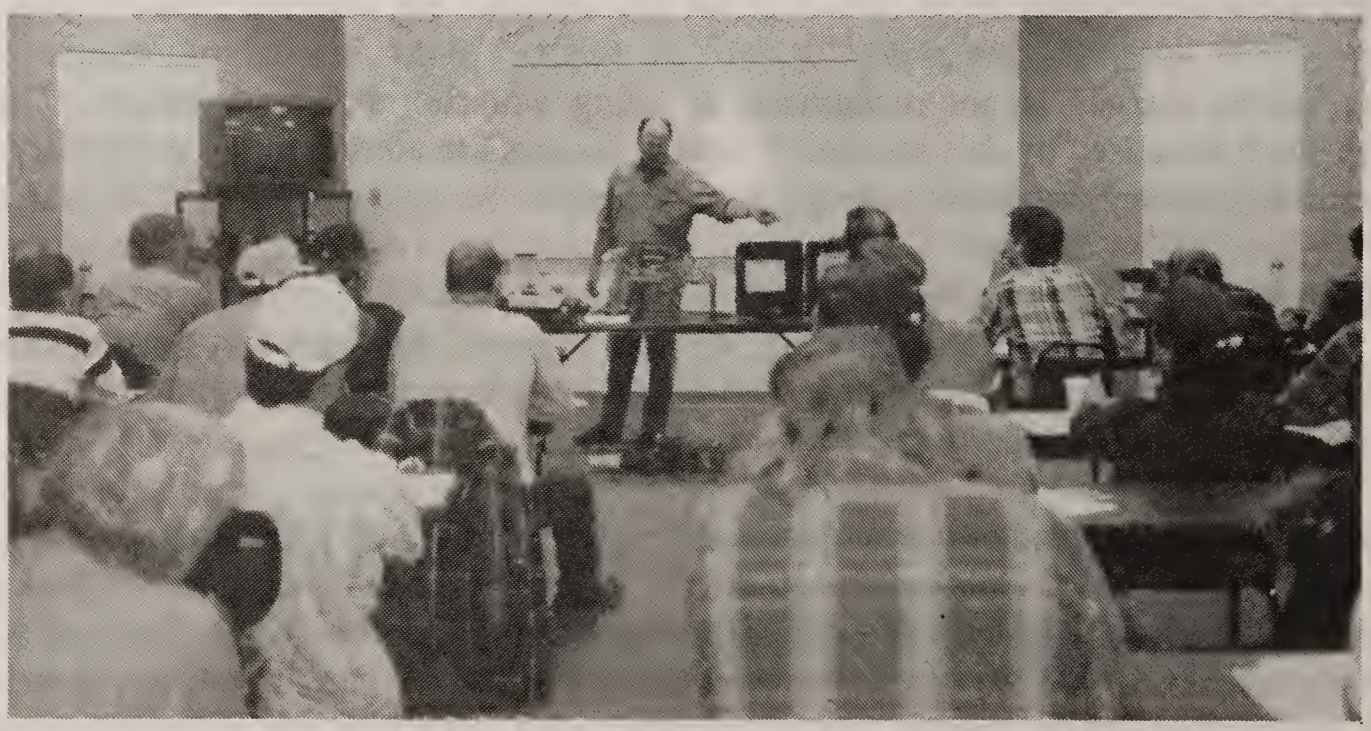
1993 proved to be another excellent training year for the **Montana Environmental Training Center (METC)**! Some training highlights for the year include:

- Implementation of the **1st Annual Spring Water School** in Miles City. It was a very "spiritual"experience, figuratively speaking, since our meeting facility was the historic Ursuline Convent Building in downtown Miles City! If those beautiful oak-trimmed rooms could talk, what wonderful stories they could tell! Fifty-one operators, administrators, and managers were in attendance at this school that targeted small systems. Topics and presentations ranged from wells and lagoons to process control of water treatment and activated sludge.



Training in the Chapel!

- **Cross-connection** Training. METC held this workshop in the brand new training room at the Kalispell Advanced Wastewater Treatment Plant. Barry Carter, Utah Environmental Technology Center, presented a cross-connection program that highlighted such topics as hydraulics, backflow prevention devices, and maintenance and testing of devices. Thirty-two attendees found themselves "immersed" in lots of "hands-on" activities. Thanks to the generosity of several manuafacturers, METC was able to obtain the needed valves and pipes to build devices that could be tested for cross-connections. And they were certainly put to the "test" at this workshop!



- Activated sludge concepts were presented at the annual 3-day Yellow Bay **Advanced Wastewater Workshop**. Paul Klopping of Environmental Training Consultants (ETC), Inc. was the featured speaker. Paul's "upbeat" delivery style and student participation technique were the strategies that kept everyone very interested and involved in the subject. Troubleshooting teams worked on some Montana case histories, diagnosing some sludge quality

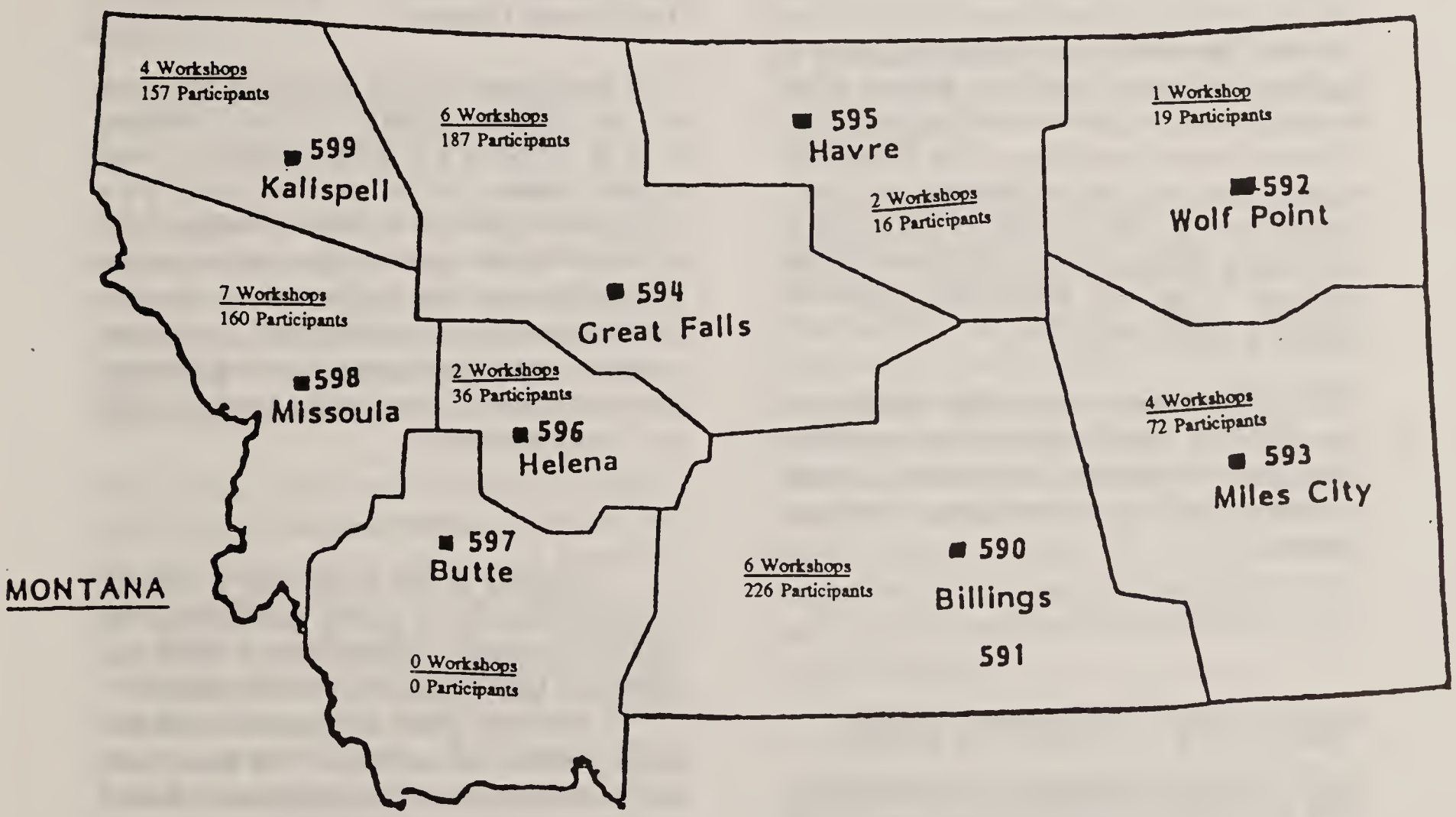
problems and assessing some possible solutions. Everyone learned a lot and had a great time at Yellow Bay on Flathead Lake!

- The four **Safe Drinking Water Act (SDWA) New Sampling and Monitoring** workshops proved to be very popular. A record attendance of 86 was recorded at the Kalispell workshop. Transient and non-transient, community and non-community systems were there to learn about the Lead and Copper Rule and the Phase I and Phase V Rules as they applied to them. Water quality specialists with the Water Quality Bureau (WQB) provided a great deal of information on the new rules, but as with any "new" regulation there are always questions on specific applications to each unique water system. Attendees were encouraged to contact the WQB Specialists for answers to their specific questions.

****

METC WORKSHOP ACTIVITIES

The following map of Montana illustrates the number of METC workshops conducted in the the zip-code regional areas. The number of participants attending those workshops is also noted. The figures represent workshop activities covering the period of October, 1992 through September, 1993. **A total of 32 water/wastewater and other environmental workshops were conducted with a total of 873 participants in attendance!**



As always, METC welcomes visitors! We are located at Northern Montana College, Great Falls Campus, 1211 Northwest Bypass, Great Falls, MT 59421. Our new direct phone number is 454-2728.

FROM THE WQB ARCHIVES...

The Water Quality Bureau is experiencing the loss of several outstanding and long-time employees, and articles elsewhere in this edition of the Big Sky Clearwater profile their tenure and accomplishments. Their "movin' on" has created a flurry of office cleaning activity and in doing so, we've found some real treasures. The following articles are reprinted from the earliest editions of the Clearwater (over 20 years ago!) to editions of the early 1980's. We hope you enjoy them!

Reprinted from the Big Sky Clearwater
Volume I, No. 2
June, 1971

BIG SKY CLEARWATER - BOUQUETS

W. Van Heuvelen, Chief
Environmental Health & Engineering Services
North Dakota State Department of Health

"It was a pleasure to receive the first issue of Big Sky Clearwater, the Official Bulletin of the Montana Section of AWWA and Montana Water Pollution Control Association. This Department congratulates your two organizations on a very fine publication. We trust that we can exchange our Official Bulletin for your publication so that programs in the two neighboring states will develop a closer cooperation.

"Our staff members enjoyed the articles and examining the general makeup of your fine publication. We especially enjoyed the pictures, cartoons, and the instructional material presented."

Roman C. Fargo, City Engineer, Bozeman

"May I add my congratulations to all the others you and your fellow members of the Publishing Committee should receive.

"I received my copy today and am quite impressed with your first effort. I think you have done an admirable job in your production. In other words "It's Great."

"Will reserve my adverse comments until I receive my first rejection slip."

A.W. Pieper
The Permutit Company

"I've had a chance to look through the first issue of the official bulletin of the Montana A.W.W.A. and W.P.C.A. Associations. I want to take a moment to tell you that I think it's a very nice job and that it obviously reflects a lot of work on the part of the people in the associations who put it together. A first for you; I believe your advertisement is the first one to appear in any publication featuring Permutit Reverse Osmosis. You stole the march on all of us. Congratulations!"

Standing in line at the teller's window, a customer noticed an elderly man handing the cashier a computer perforated check which was neatly and heavily creased down the middle.

The teller gently unfolded the check and began counting out currency. "You know," she said to the pensioner, "the government doesn't like for you to fold these checks."

Without hesitation, the old gentleman pocketed his money and snapped, "The government does a lot of things I don't like, too."

The State Department of Health is my shepherd, I shall not want---they maketh me to lie down and work in cold trenches---they leadeth me beside the dirty waters---they restoreth my certificate. They leadeth me in paths of pollution abatement for their namesake. They preparest examinations for me in the presence of my ignorance. They anointest my diligence with critical engineering reports---my bypass runneth over. Surely misery and want shall follow me all the days of my life and I shall dwell in filth and frustration forever.

Reprinted from the Big Sky Clearwater
Volume II, No. 2
September, 1972

PUBLIC SUPPORT IS A MUST

by Arlie Jensen, Wolf Point

Public support for improvement projects can be obtained if the proposed work adequately meets the need and the public is completely informed. This, at least, appears to be our experience in proposing some major improvements during the past year.

Wolf Point, like most Eastern Montana towns, has an abundant supply of water; but the quality is not very good. A series of public meetings held by the Chamber of Commerce Development Committee indicated that a substantial number of people considered our water quality to be a major community problem; the City Council voted to have an engineering survey conducted to investigate the feasibility of constructing a water treatment plant in conjunction with other needed improvements.

The plan that was finally adopted by the City Council contained recommendations for immediate improvements, and others to be made periodically during the next ten years. A water plant using the existing well system as the source of supply was included in the plan. A rate increase, high enough to pay for all improvements planned, was also presented. We did of course contemplate receiving grant assistance from several sources. This rate increase was proposed to go into effect two to three years prior to construction of the water plant. This was to pay off some existing indebtedness and to pay for a booster station that was needed immediately.

Before proceeding further the City Council wanted an expression from the water users as to whether this was what they wanted or not. Since we were not ready to vote bond issues, but did want approval before asking for the rate increase, it was decided to use a public meeting as the means of getting public reaction.

To help explain the proposals and to answer questions, representatives from the City scheduled small group meetings with civic organizations and several church groups. The local newspaper carried headline stories for several weeks and the radio station had an informational editorial for a week. A letter was mailed to everyone receiving a water bill, explaining in detail the proposals being made. In each case, the point was emphasized that a decision was going to be made on the basis of the response at the public meeting.

The meeting was attended by City officials, a representative from the State Board of Health and Environmental Sciences as well as a spokesman for the engineering firm. There were also two engineers representing the water conditioning industry in attendance. They proposed a type of

treatment that was considerably different than that being presented by the City.

After more than two hours of frank discussion the people in attendance were asked to indicate on ballots that had been previously handed out as to their wishes. Approximately 2/3 voted in favor of the project as presented by the City. As a result of this vote we requested and were granted the rate increase. We are now in the process of obtaining State and Federal cost sharing that is needed before the project can proceed.

While this program does have some opposition that is working steadily to change people's minds we feel that through the effort made in giving and receiving information on the water system we are in the position of proposing what most of the people want, and this is after all what we are here for.

TECHNICAL PAPERS

Seven papers were submitted to the Committee in competition for the 1972 Permutit Award. John Daley was declared the winner for his paper titled, "Slush Ice." John was presented with a Hamilton chronograph (stop-wrist watch) at the Convention; and the Plaque at a Laurel City Council meeting. The other papers were:

"Constant Temperature Jar Testing"
by Miles Tuttle, Divide

"Heat Banding Secondary Digester"
by Robert Haverfield, Missoula

"Tone Control Remote Stations"
by Larry A. Walter, Billings

"Tour of Helena Wastewater Plant"
by Larry Longfellow, Helena

"Sewer Improvements"
by Roger Pierce, Dillon

"Sewage Plant Operation"
by Walter Wright, Lewistown

The Committee commends the other contestants for their fine work. Mr. Foote, Committee Chairman, pointed out that while they all couldn't win, the real benefit was to the authors themselves in the preparation of the papers; also that the "competition was keen."

We are pleased to advise that three of the papers have been accepted for publication in national trade magazines. We don't want to "scoop" the magazines on this, but suggest that you check coming editions of: "Water and Sewage Works Magazine," "Public Works Magazine," and "Water and Wastes Engineering." The publication of the papers are the result of the cooperation of A.W. Pieper of the Permutit Company.

In conclusion, we are happy to report that we already have the first Technical Paper entered for competition in 1973. We suggest that you send yours to: Mr. H.B. Foote, Chairman, Technical Papers Committee, Montana Section AWWA-WPCA.

SLUSH ICE

by John Daley, City Engineer, Laurel

Did you ever hear of such a thing? We at Laurel, Montana, have fought this for years. An associate and friend explains that it is similar to a bottle of coke left in the freeze compartment. It may appear as liquid, but the instant it is touched, it is slush.

Cooperation, intuitive genius, crew teamwork, and trial and error combined to solve what was previously an insurmountable, costly problem for the City of Laurel.

Slush ice, which formed near the City's intake in the Yellowstone River every winter sealed the intake off and actually jeopardized the supply of water to this community of 5,000.

Slush ice is caused when the rushing water is slowed to be brought into the City's intake pier area. Several years and several thousands of dollars, $6,000 in one year, were spent hand shoveling the slush ice from the intake. City crewmen, assisted by employees from the Farmers Union Central Exchange Refinery, worked around the clock shoveling ice with a perforated shovel into a bucket which was then hoisted by electric hoist up out of the pier and dumped into the river. This, of course, was very costly and a slow process.

A new engineer was hired by the City and it didn't take me, John Daley, long to realize a new system, less costly and more expedient, must be devised. First a three inch Trashmaster pump was used; and although this method cut man hours to operate it, this still did not solve the problem.

Discussion among City crewmen and fellow engineers continued and it was in a discussion with water serviceman, Sam Tinnes, a long-time City employee now deceased, that the idea was born of laying a perforated pipe in the river under the ice. This was done by installing a 24-foot long, 18-inch perforated pipe of corrugated metal upstream from the pier. Although this plan was a far cry from the hand shoveling system, the pipe did seal off, requiring maintenance. However, I still felt there must be a better solution, so it was back to conferences, discussions, and new ideas.

The next year, a larger pipe, 300 feet long, was placed crosswise in the river and tied to a manifold in the bank. This seemed to solve the problem, however, in an effort to completely cover the pipe with gravel, by the use of a small bulldozer, too much pressure was applied and the pipe buckled. Half of the pipe was lost in the river. This plan was also unsatisfactory for the Farmers Union Central Exchange, which was receiving water with fluctuating degrees of hardness, causing problems with their steam boilers. They offered to assist the City and return to the hand shoveling method.

Another City crewman, Alex Vogel, suggested a perforated pipe be attached to the intake and just allowed to ride free on the bottom and in the deepest part of the river like a large tail. For several years, this pipe had been installed by employing members of a skin diving club, who made the connection in the pier under about five feet of water. This method of utilizing the perforated pipe was very successful.

Moss in the river at certain times of the year created a problem so the pipe is removed during the spring and summer, placed on the bank, and then returned to the river in the fall. The valves remain closed on the pipe until the slush ice time of the year arrives.

The valves are then opened, all other valves closed, and the City of Laurel receives an adequate water supply despite slush ice.

Refinements in the method of installing the pipe were devised and the skin divers are no longer needed. Vogel invented a corrugated coupling with a boomer-like device that can be installed from above the water. I devised a periscope-type instrument to allow crewmen to observe the installation without having to get into the water.

For two years now this new method has proved very successful with no problems, in fact, with no inspections during the slush ice period, thereby solving a problem for the City that originally cost thousands of dollars and is now accomplished in less time and at a nominal cost thanks to the cooperation, genius and teamwork of the entire City crew.

Please contact the WQB --- BEFORE you try this approach.---Editor (Feb. 1994)

Reprinted from the Big Sky Clearwater
Volume IV, No. 3
October, 1974

DO-IT-YOURSELF LAB EQUIPMENT

Some of the rather expensive pieces of laboratory equipment can be improvised and home built at a considerable savings in money. Lue Halliburton at the Bigfork sewage treatment plant has shown his talents in this respect. Lue built a lighted titration stand for his lab at a cost of $3.60. He built a small wooden box about 5" by 8", mounted a small lamp and a small fan motor on it. He then covered it with an opaque "opal" glass. A permanent magnet is attached to the motor shaft and rotates just below the glass. A toggle switch and rheostat speed control complete the job. He now has a magnetic stirrer with diffused light to better see the end point of his titrations.

For a suction pump Lue originally made use of a very antique dental suction pump, the type that dentists use as "slobber stoppers." While this was effective enough, it was noisy and developed bearing problems. So Lue retired the tired old dental pump and installed a. second hand refrigerator compressor as a source of vacuum for his millipore filters. The refrigerator compressor is quiet but lacks capacity to do more than one filtration at a time---but then this is all he needs to do.

Anyone need a second hand slobber stopper?

Reprinted from the Big Sky Clearwater
Volume X, No. 2
Summer Issue 1980

KEEP COOL UNDER FIRE,
AN OPERATOR SUGGESTS
by Dean A. Sloan
Miles City Street Superintendent
and Class II Water Operator

The opinion was expressed at the 46th Annual School for Water and Wastewater Operators that we are not appreciated enough by the very people we serve every day, or even by the councils that run our cities and towns. It was also stated that "if some of those &#!(expletive deleted by Clearwater Editor)!#& had been standing close by instead of using the phone to chew me out, I'd have decked them." I empathize with the man who made that statement but I do not agree with his attitude.

Our winter of 1978-79 in Miles City was no different than the winter any of the cities in

Montana had. It was a long, hard winter. It was a winter that showed us the deficiencies in our systems. It was a winter that taxed our patience, drive and stamina. It was a winter that made us improvise and experiment. It was a winter that even caused my wife some grief because if I was not home when someone called with their problems, they would chew my wife out in lieu of me. But it was not a winter that made me forget just who it was that I was giving all of that overtime for.

Our business, yours and mine, is a service business. To compound that, ours is a service business that is not paid for "across the counter" but instead, it is paid for in a most hideous way, by **TAXES**. We are under the gun the moment we go to work; before we do anything to bring any wrath down on us. We are government employees, whether it be City, County, State or Federal, and we are paid to do our job by every person we come in contact with, whether it is one of those "&#!(expletive deleted by Clearwater Editor)!#&" mentioned above or the nicest, sweetest little old lady in town. They all deserve the same clean water and free-flowing sewer.

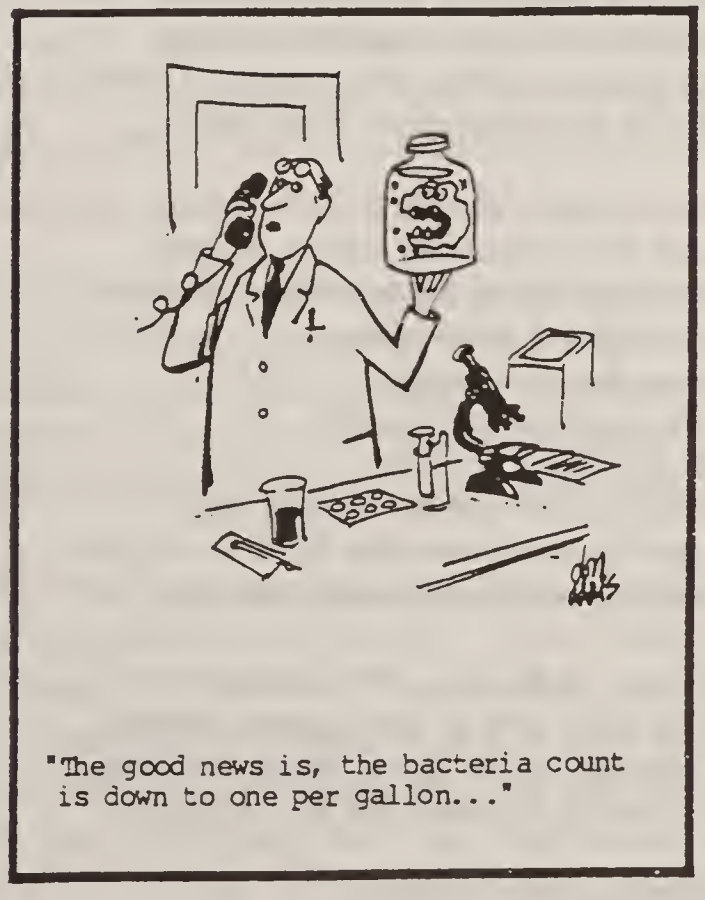
People do call our offices and homes and commence to chew us out when they have a problem. But there may be a reason for it. First of all, they don't call until they have a problem. When they do call someone, they may call the wrong office and when they have to call different offices, they, in their anxious state, start getting the feeling they are being shuffled around and their anxiety turns to agitation.

With frozen water, or a frozen sewer, everything in a household is at a standstill. If you add that to the irritation of being "shuffled" from phone to phone, you can be sure that when the taxpayer gets the person cornered that is in charge of it all, the superintendent's attitude had better be good or the taxpayer may explode with all of these frustrations on that unsuspecting government employee.

Every single employee---from the superintendents to the foremen to the operators to the laborers---must realize that they serve in an industry where each person that they come in contact with pays their wages DIRECTLY. City employees cannot and should not dismiss complaints by the taxpayer or take their job lightly. We have a responsibility that goes far beyond the responsibilities incurred in the private sector. We cannot tolerate poor attitudes or rudeness in those we work with, in those we work for, or those who work for us.

The responsibility we bear and the lack of recognition we get for day-to-day work we turn out as a matter of habit, and the emergencies we handle with experience and expertise are not things that are going to change because we can "out-shout" our irate customers. Those are things that may never change. If they do change, however, it will be due to the professional way that we handle our work and the courteous way that we handle our customers. If we can't bear that responsibility, we owe it to ourselves and our profession to change our job to one with which we can cope.

Timeless words of wisdom.—Editor (Feb. 1994)



Reprinted from the Big Sky Clearwater
Volume XI, No. 3
Winter Issue 1981

PREVENTION: The Name of the Game
Reprinted from NETA Newsletter

Preventive maintenance. How often the subject is just given lip service in the field and nothing is really ever done. The following poem, submitted by Dr. John Austin, may serve as a useful takeoff point for your next session dealing with preventive maintenance:

"Twas a dangerous cliff, as they freely confessed,
  Though to walk near its crest was so pleasant;
But over its terrible edge there had slipped
  A duke and full many a peasant.
The people said something would have to be done,
  But their projects did not at all tally.
Some said, 'Put a fence 'round the edge of the cliff;'
  Some, 'An ambulance down in the valley.'

"The lament of the crowd
was profound and was loud,
  As their hearts overflowed with their pity;
But the cry for the ambulance carried the day
  As it spread through the neighboring city.
Collection was made, to accumulate aid,
  And the dwellers in highway and alley
Gave dollars or cents - not to furnish a fence;
  But an ambulance down in the valley.

"'For the cliff is all right if you're careful,' they said
  'and if folks ever slip and are dropping,
It isn't the slipping that hurts them so much
  As the shock down below -
  when they're stopping.'
So for years (we have heard),
as these mishaps occurred,
  Quick forth would the rescuers sally
To pick up the victims who fell from the cliff
  With the ambulance down in the valley.

"Said one, to his plea, 'It's a marvel to me
  That you'd give so much greater attention
To repairing results than to curing the cause;
  You had much better aim at prevention.

For the mischief, of course,
should be stopped at its source,
  Come, neighbors and friends, let us rally.
It is far better sense to rely on a fence
  Than an ambulance down in the valley.'

"'He is wrong in his head,' the majority said;
  'He would end all our earnest endeavor.
He's a man who would shirk this responsible work,
  But we will support it forever.
Aren't we picking up all, just as fast as they fall,
  And giving them care liberally?
A superfluous fence is of no consequence,
  If the ambulance works in the valley.'

"Our story looks queer as we've written it here,
  But things oft occur that are stranger.
More humane, we assert, than to succor the hurt,
  Is the plan of removing the danger.
The best possible course, is to safeguard the source;
  Attend to things rationally.
Yes, build up the fence and let us dispense
  With the ambulance down in the valley."

Author Unknown



DRINKING WATER UPDATE

Jim Melstad, Public Water Supply Section Manager

Sampling for Lead & Copper; Phase 2 & Phase 5

Most public water suppliers serving less than 3300 people completed their first six-month sampling period for lead and copper prior to January 1. Also, the deadline for sampling for the "Phase 2" and "Phase 5" organic chemicals under the provisions of the Chafee-Lautenburg Amendment passed on October 1.

The cooperation and willingness to comply with these complex new regulations was exceptional, especially considering the close timing of the deadlines. Our sampling record should compare favorably with any other state. **We would like to extend our congratulations and thanks to the water supply operators and managers, to Montana Rural Water Systems and the Midwest Assistance program, and to the laboratories involved in analysis and collection.** The success of this effort is a tribute to your professionalism.

We are still receiving sample results from the labs. Terry Campbell of our staff should have already contacted those of you that have had lead or copper exceedances. We are still reviewing the Phase 2 and Phase 5 sample results. We will notify those of you that sampled of your status with respect to any future sampling requirements for the Phase 2/5. We will also respond to those of you that requested written confirmation of sampling "waivers" under the Chafee-Lautenburg amendment.

Reauthorization of the Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) must be reauthorized periodically by Congress and the President. Reauthorization is supposed to address changes in the act that may have become necessary as time passes. The last SDWA reauthorization was passed by Congress and signed by President Reagan in 1986. Reauthorization activity is expected to increase significantly early in 1994.

A bill has been introduced in each house. House resolution (H.R.) 3392 was introduced in the House of Representatives by Representative Slattery of Kansas. Senate bill (S.) 1547 was introduced in the Senate by Senator Baucus of Montana. Both bills address a reduction in sampling requirements for systems serving <3300 people, a reduction in the requirements for the future regulation of contaminants, and simplification of public notification requirements.

H.R. 3392 also would require changes in the way that maximum contaminant levels are set. Both bills would change the way that variances and exemptions are issued. H.R. 3392 is favored by those that represent the water works industry because it would relax current requirements more than S. 1547. I am not aware of any responses or opinions at this time from organizations that represent consumers. Both bills have strengths and weaknesses that will likely be changed during the legislative process. The bills are quite long, but you may obtain a comparison of the different reauthorization proposals by calling the Public Water Supply Program at 444-4549.

He has supported public education and operator certification and training when ever possible he has made sure that he and his staff attend training, seminars, meetings, and one on one visits to public water systems throughout Montana.

Another area that has been enhanced and greatly improved under Dan's direction is the review of plans and specifications for water system installation,additions, and/or modifications. He devoted a great deal of time and effort towards developing guidelines and standards for this program in order to ensure that the consumer gets his or her money's worth with regard to water system operation and maintenance.

Dan whole heartedly believed in what he was doing and gave everything his best effort to ensure the public health. He has brought strength, encouragement, support and humor to our staff who feel challenged and rewarded by his leadership style. We shall surely miss this Chief of the Water Quality Bureau..... Uncle Dan Fraser.

How-To Manual For Ground Water Protection Projects

This manual was developed by Lillian Madarchik of the El Paso Retired Senior Volunteer Program (RSVP). It is a step-by-step approach to conducting volunteer ground water protection projects.

The manual drew upon the lessons learned during the 1990 El Paso Ground Water Protection Volunteer Project. During this project, 23 senior citizens inventoried the Wellhead Protection Areas surrounding the city's 138 public water supply wells.. Furthermore, they did the inventory in under four days!

Available free of charge, the manual can be obtained by calling the TWC at (512) 463-8266 or by calling Lillian at (915) 541-4374

THANK YOU, DONNA
by Jim Melstad

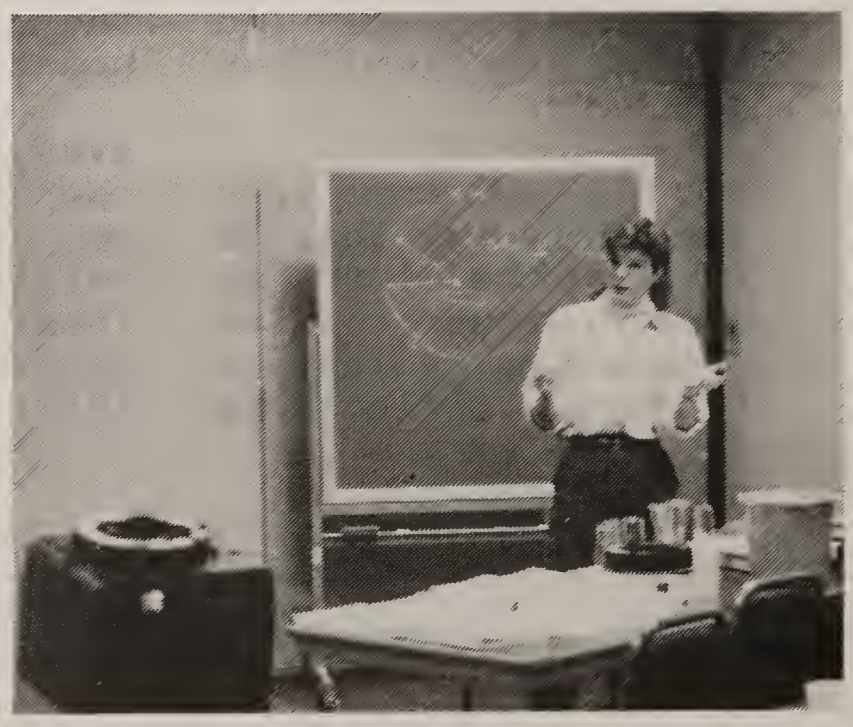
Donna Jensen left the Water Quality Bureau in October of 1993 to spend more time with her daughter Hayley and husband Keith, and to try life outside of the regulatory world. Donna and her family fortunately have not left Montana and still live near Helena in Montana City.

Although it seems like yesterday, Donna began work for the Water Quality Bureau in 1985. She was under a contract with the WQB to evaluate the filtration performance of water treatment plants. She became a full-time employee in 1986 and immediately became interested and very involved in operator training and water treatment issues. Donna was promoted to Manager of the Field Services Program in 1991 and quickly developed an active, competent training program. She served on and chaired the Steering Committee of the Montana Environmental Training Center in Great Falls.

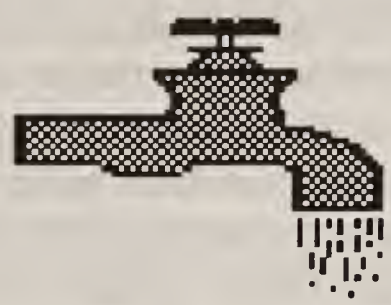
Donna has always been very active in the Montana Section of the American Water Works Association. She devotes much of her time to local and national committees for AWWA. She received the Fuller Award from MSAWWA in 1991, the highest award given by the section.

These are only highlights of Donna's accomplishments. Although we were very sorry to see her go, we are happy to see her take advantage of other opportunities. We thank her for her outstanding work, for her pursuit of high standards for drinking water and public health, for her interest in the people in our industry, and for the fine example that she set. Thanks, Donna and we wish you the best of luck!





LEAD AND COPPER TAP WATER MONITORING



Terry Campbell
Environmental Engineer Specialist
Water Quality Bureau

I. What are the results of the first round of lead and copper monitoring for small systems?

Beginning July 1, 1993 and ending December 31, 1993, approximately 900 Community and Non-Transient Non-Community systems began collecting tap water samples for lead and copper analysis. Although all results are not in at the time this was written, we are beginning to develop some insight into how many systems will have "action level" exceedances. Approximately half of the lab data has been processed at this time and approximately 15 percent of the systems are having lead and or copper exceedances. Almost half of the exceedances have occurred in school or institutional facilities. For children, lead exposure is a real concern because of impaired mental and physical growth. Our bodies do not need lead at any level and very low levels have been documented to cause impaired mental development. From this perspective I feel good about what we are addressing through this monitoring. These are the primary types of facilities where risk is greatest and needs to be minimized.

II. How bad have results been?

In a few cases systems have had lead levels 10 to 20 times over the lead action level of 0.015 parts per million. Copper levels have been recorded as high as 4 to 5 parts per million. The copper action level is 1.3 parts per million. Most of the systems with exceedances are only slightly over the action levels. But the results from their samples typically show a consistent concentration of lead and or copper.

III. What does this mean for the systems with exceedances?

First, a lead or copper exceedance is not a violation of drinking water standards. If lead is the culprit, public education/notification is required within 60 days. This process provides advice for users to help eliminate

the consumption of lead which is an acute toxin.

Follow up to an exceedance is initiated immediately by collection of Water Quality Parameter (WQP) samples. These WQP measurements are characteristics of water which can determine the type of chemical reaction which will occur when the water contacts metal piping. In other words these measurements can tell us if water is corrosive. These measured values are used to make system improvement/treatment decisions. Something as simple as pH adjustment may be the solution to corrosion for a system. Not only can these types of improvements be of benefit in reduced lead and copper exposure, but also extend the life of a distribution system.

IV. When are systems going to get a reduction in monitoring?

After two rounds (six month periods) of monitoring are completed and the action levels are not exceeded, systems will be allowed to go to reduced monitoring. The first stage of reduction requires that tap samples for lead and copper are collected annually until three years history is developed for the system. If three years sample history is gathered without a lead or copper exceedance, the system can reduce monitoring to once every three years.

Remember when you are allowed to go to reduced monitoring, those samples will be required to be collected in the Summer months between June and September. This time period was selected because this is the time when water is typically most corrosive due to temperature increases.

V. How soon will the State gain "Primacy" over the Lead & Copper Rule?

Currently the EPA is the "primacy" agency with regard to the Lead and Copper Rule. That means that the State currently must report all data gathered from the implementation of the Rule directly to EPA. EPA retains the enforcement authority to ensure that systems comply. Montana is currently working with a contractor in drafting a State version of the Lead and Copper Rule. A draft version of this rule is currently being reviewed by our staff and is soon to be submitted to EPA for their review. Approval of a final draft and board approval is expected to occur prior to January 1995. In developing this Rule the State must be at least as stringent as the Federal EPA requirements. So don't look for a lot of changes to the way the Rule is structured currently.

UPDATE ON PHASE II/V
GARY WIENS, WATER QUALITY BUREAU

Water Quality Bureau staff is reviewing the Phase II/V data that has been pouring in since last summer. although no one has dared try, if piled up, the stack of reports would be four feet high! If all goes well, all community and non-transient non-community systems should be notified sometime in late winter or spring where they stand on their Phase II/V sampling requirements. Priority will be given to notifying those systems that will be required to do additional sampling because of an organic chemical detect, nitrite or nitrate trigger level exceedance or any MCL exceedance.

The amount of Phase II/V data is impressive!!! Montana public water suppliers should be commended for their cooperation in collecting the samples and getting the data in to the Water Quality Bureau. Only a few states have achieved a better turnout than Montana. Please remember that if you used a laboratory other than the State Lab you must mail in a copy of your results to the Water Quality Bureau Rm A-201, PO Box 200901, Helena, MT 59620-0901.

However, not all has gone smoothly with the Phase II/V sampling. Some laboratories used by Montana water suppliers have reported detection of adipates and phthalates at varying concentrations, some exceeding the MCLs. these chemicals are common laboratory contaminants, occasionally entering a sample from plastic tubing, bottle stoppers or gloves. John Hawthorne of the DHES Chemistry Laboratory is working with the Water Quality Bureau on how to handle this problem. Nobody wants a water supplier to have to sample quarterly because of a laboratory-introduced contaminant!

The Water Quality Bureau is using an EPA-hired consultant, Wade Miller Associates, to write the state's Phase II/V rule. Until a state rule is adopted, the Water Quality Bureau will be implementing the federal rule. WMA submitted draft rules for DHES review in December 1993. The new state rule will meet the minimum requirements of the EPA's Phase II/V regulations, that is, no stricter requirements are proposed.

Craig Pagel of the Water Quality Bureau has taken over the Phase II/V waiver program from Vern Heisler, who left the Department. Waivers may be based on proving there is no use, storage or transport of a chemical in the watershed or upon demonstration that a source is not susceptible to chemical contamination. Waiver applications are not yet available, since Craig is currently working on waiver form revisions needed for EPA approval. If you wish to request waiver forms, give Craig a call at 444-4549.

EPA Recommends Operator Certification

In a report submitted to Congress regarding reauthorization of the Safe Drinking Water Act (SDWA), one of the recommendations made by U.S. EPA Administrator Carol M. Browner included the need for training and certification of system operators. The recommendation states:

"Forty-five states currently have operator certification programs. However, these states exempt small systems to some extent. states should implement a complete program for operator certification, as a condition of primacy. EPA should define minimum program criteria and address the role of certified operators as appropriate within individual drinking water regulations. systems that cannot afford to train staff or hire certified operators could contract for part-time services or develop cooperative agreements with nearby systems."

"EPA has begun to place greater emphasis on operator certification," according to J. Kevin Reilly, U.S. EPA Drinking Water Specialist for New England. "As more and more regulations come on line, it is getting to the point that it is no longer sufficient to simply meet minimum standards. We are looking at the need to optimize the operation of systems and in doing so, highly skilled people (certified) are needed to operate and maintain these systems".

Reauthorization of the SDWA is expected to occur sometime during 1994. If EPA is authorized at that time to establish minimum criteria for operator certification, they will likely convene a work group to develop and propose regulations for minimum criteria.

FOR IMMEDIATE RELEASE
JANUARY 19, 1994

FOR MORE INFORMATION:
CAROLE MACKIN, 444-5492

Public's Help Needed to Protect State Ground Water



Helena - - Montana's new Ground Water Planning Committee is looking for help from members of the public to protect ground water across the state. The next meeting will be on **March 10, 1994** at 9:00 am in the Department of Health and Environmental Sciences' Conference Room C-209, Cogswell Building, 1400 Broadway, Helena.

Three Subcommittees will consider ground water protection, remediation, and education. Membership of the subcommittees may be expanded to include interested members of the public.

The committee is charged with integrating the recommendations of the 1992 Montana Water Plan and the EPA's Comprehensive State Ground Water Protection Program Guidance. As a result, a Comprehensive State Ground Water Plan, scheduled for completion this year, will address both quality and quantity of Montana's ground water to prevent ground water pollution and keep aquifers from being depleted.

At the January meeting, the committee established a goal and purpose statement for the ground water plan. The goal is: ***To protect and improve Montana's ground water resources in order to sustain current and future uses that are in the public interest.*** The purpose is: ***To recommend a set of actions to improve public and private management of Montana's ground water.***

The committee, selected last fall by the directors of the Montana Department of Health and Environmental Sciences (DHES) and Department of Natural Resources and Conservation (DNRC), includes representatives from the state legislature, agencies and boards as well as environmental, agricultural, business and conservation organizations.

For more information, contact Carole Mackin (DHES) at 406-444-5482 or Judy Gruber (DNRC) 406-444-6637, or write to the Montana Ground Water Planning Committee, DHES Water Quality Bureau, P.O. Box 200901, Helena, Montana 59620-0901.

PUBLIC WORKS

by Ginger Stevens
City of Great Falls Public Works

INSITUFORM

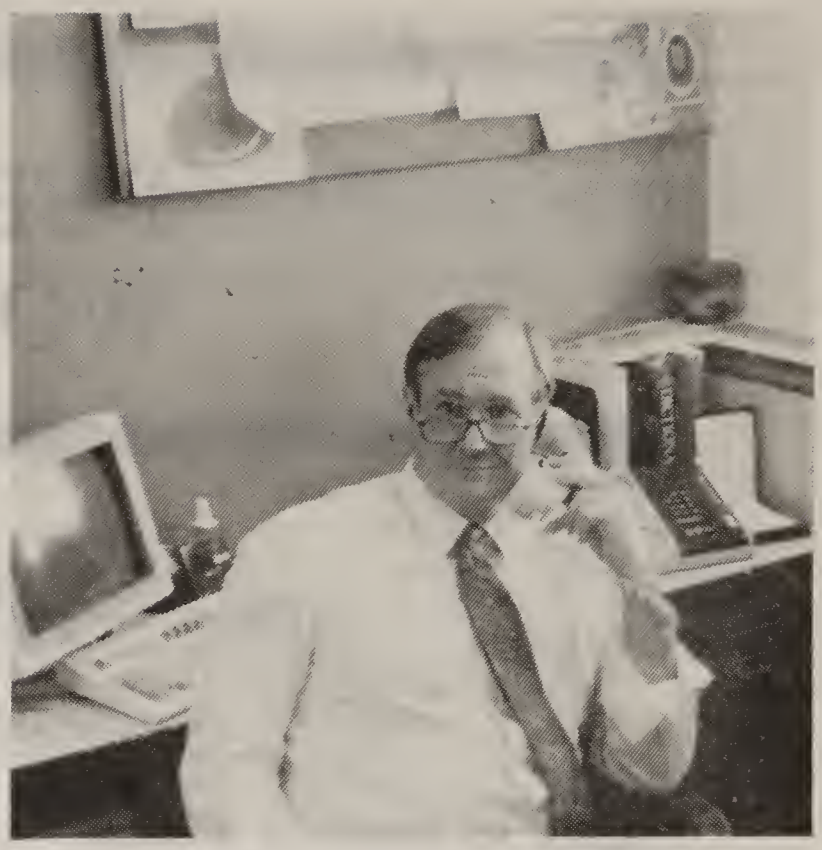
Digging up streets is a dirty, messy, time-consuming and expensive process. It can also be dangerous, unsightly and a serious disruption to neighborhoods and businesses.

The City of Great Falls Utility Division has found an exciting way to use new technology that replaces old pipes without digging. This new technology, called Insituform, replaces the dig and replace method of fixing old sewer pipes.

Gelco Insituform, of Salem, Oregon, replaced 1,700 feet of sewage pipe with the insituform in early November between First and Second Avenues North. Bernie McDonald, Mark Frahm, Harold Engen, Dick Mauseth and Dail Hardinger worked around the clock assisting. This method saves time, digging up of streets and rerouting of traffic. It is also more economical, costing the city about half as much as the old method of digging and replacing.

Insituform is a soft, flexible tube that looks and feels like heavy felt. It is saturated with thermosetting resins and inverted with water to line the existing pipe. Because it is soft and pliable, it can negotiate 90 degree bends, span missing sections and conform to any shape pipe. The water used to invert it is then heated through a boiler. The hot water causes the thermosetting resin to cure within a few hours and form a tight fitting structural pipe. The liner is, in most cases, stronger than the pipe it replaces, jointless, non-corrosive and stops cracks and leaks that lead to pipe collapse. It has a 50-year design life but is predicted to last much longer. Greg Howells, of Gelco, says that Great Falls is the first city in Montana to put this new technology to use.

Farewell.....to Uncle Dan!



Dan Fraser retired from WQB!

WQB says farewell to Dan Fraser after 17 years of distinguished service December 29, 1993.

Once studying pre-medicine in Bozeman but went on to become a doctor of water quality. Originally from Sundance,Wyoming, he worked the oil fields, trail crews, and in classrooms teaching high school science. Dan accumulated an impressive list of academic credentials - a Bachelor's Degree in Ed from Eastern Montana College, two Masters degrees - one in biology from the University of Oklahoma and one in civil engineering from Montana state University. He's a licensed professional engineer and a expert on media relations - you could even call him a "spin doctor" to quote the department director when he was recently given the Bartlett Award for employee of the year by DHES.

But Dan's academic career and success had nothing to do with the Bartlett Award. His nomination attested to the kind of vision and leadership that has helped preserve the quality of our water resources in Montana. When it wasn't popular to do so, he was insisted on adhering to what the law mandates and going to the legislature and getting clarification when the laws were unclear. Dan confronted highly controversial issues in water pollution, water protection, subdivision review, infrastructure financing and many others and repeatedly snatched victory from the jaws of defeat. He has improved enforcement and made its application more consistent, earning increased credibility for the bureau.

Since being put in charge of the public water supply section of the Water Quality Bureau in 1980, Dan's accomplishments towards the betterment of public drinking water in this state have been numerous. He has been responsible for implementing the required sampling regulations for more than 2000 public water systems and that these systems are periodically check for sanitary deficiencies. His emphasis has been on correction of system problems and to see that his section has cooperated and lent assistance to the individual water supplier to achieve a particular course of corrective action. After all attempts to arrive at a satisfactory solution to a particular problem have been exhausted, enforcement actions for the protection of the public health have been initiated.

WATER FOR PEOPLE:
A project to help those less fortunate

by Jim Melstad

The American Water Works Association (AWWA) started a project called WATER FOR PEOPLE (WFP) several years ago to help people in other countries provide themselves with safer drinking water. An estimated 35,000 people die each **day** because they don't have safe water to drink. (It is no coincidence that our high standards for drinking water help to prevent this kind of tragedy in the U.S.) WFP provides technical assistance, in-kind services and actual water works improvements to those in need of better drinking water.

John Campbell of Polson recently started the WFP program in the Montana Section of AWWA. John organized our first meeting in Helena and he is already coordinating our first trip to Honduras to conduct an inventory of pumps in several water systems for future O&M needs. There will likely be other follow-up trips. We will hold another organizational meeting in Helena on Wednesday, February 23 at 10:00 in room A110 of the Cogswell Building.

We will be starting fund-raising efforts soon to help raise money for our trips. We would appreciate any contribution that you can provide during our fund-raising. A color TV will be raffled to raise funds at the annual MSAWWA/MWPCA conference in Helena in April. Tickets are $2 each, or 3 for $5. You may purchase tickets with your registration (please specifically request the number of tickets that you want), or you may also purchase tickets in Helena. You can also contact John or me for tickets if you do not plan on attending the conference. (You do not need to be present to win.) Also, if you are interested in participating on the committee, please contact John Campbell at 883-2661, or me at 444-5315. Thank you.



"Hey! I got news for you, sweetheart! ...
I *am* the lowest form of life on earth!"

THE MONTANA WATER ENVIRONMENT ASSOCIATION (MWEA)

IS CELEBRATING ITS 50th ANNUAL MEETING!

PLEASE JOIN THE MWEA
IN HELENA IN APRIL
AT THE ANNUAL JOINT CONFERENCE OF
THE MWEA AND THE MSAWWA

WHAT A WAY TO KICK OFF THE NEXT
FIFTY YEARS
OF WORKING TOGETHER
TO PROTECT AND IMPROVE
MONTANA'S WATER ENVIRONMENT!

SEE YOU IN HELENA
AT THE COLONIAL INN
APRIL 20 - 22, 1994

WEF and AWWA PRESIDENTS TO ATTEND JOINT CONFERENCE IN HELENA IN APRIL!!!

This year's Annual Joint Conference of the Montana Water Environment Association (MWEA) and the Montana Section of the American Water Works Association (MSAWWA) will feature visits by the Presidents of each of the National Organizations.

Philip E. Gerwert, President, Water Environment Federation, currently is responsible for oversight of worldwide compliance consistency by General Motors manufacturing plants. He previously managed Industrial Waste Activity for the Environmental Activities Staff of General Motors and was Executive Director of the Chemical Emergency Task Force for that group.

President Gerwert has a B.S. in Chemical Engineering from the University of Missouri-Rolla and completed the Executive Management Program from Pennsylvania State University. He serves as a member of the Executive Committee of the Water Environment Federation as well as on several other WEF committees and task forces. Mr. Gerwert's home state affiliation is with the Michigan Water Environment Association, and is also a member of the Air and Waste Management Association, the New York Academy of Sciences, and the American Water Works Association. He was also given the high honor of being chosen the Arthur Sidney Bedell Award winner in 1958 and selected for the Who's Who in the Midwest.

Robert H. Reinert, President, American Water Works Association, is the vice-president of Malcolm Pirnie, Inc. and has been a member of AWWA since 1966. He has served as chair of the Connecticut Section in addition to membership on various national committees including: Water Utility Council (chair), Research Division (chair), the AWWA Board of Directors, Executive Committee, and General Policy Council. Mr. Reinert received the Connecticut Section's Fuller Award in 1985.

He participates in such other professional organizations as: the New England Water Works Association (president), Connecticut Water works Association (president), American Academy of Environmental Engineers, National Association of Water Companies, American Society of Civil Engineers, and National Society of Professional Engineers. In addition to his activities on the AWWA Executive Committee, Robert serves on a variety of other AWWA committees. President Reinert has a Mechanical Engineering degree from Stevens Institute of Technology, an M.S. in Mechanical Engineering from Rensselaer Polytechnic Institute, and an MBA from the University of Bridgeport. He and his wife, Rosemarie, live in Green Township, New Jersey and have three grown children.

The Montana Water Environment Association
and
The Montana Section of the American Water Works Association

PRESENT

THE 1994 ANNUAL CONFERENCE
APRIL 21 - 22, 1994
COLONIAL INN - HELENA, MONTANA

Conference Theme:
"WINDS OF CHANGE" - Montana's Growth Impacts Resources

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Tentative Technical Program
Joint Sessions
Thursday April 21, 1994
8:00 - 11:30 AM

Session Theme: Montana Under Pressure	
8:00 AM	Call to Order Welcome from Helena Governor's "State of Montana" Address
8:30 AM	The Greater Yellowstone Area - Dr. Ray Rasker
	BIOETHICS: Costs of EPA mandates (video) - Dr. Maxey
	Flathead Lake and Crown Butte - Dr. Jack Stanford
10:30 AM	BREAK
10:45 AM	Non-Degradation Law Impacts - Dan Fraser
11:30 AM to 1:00 PM	LUNCHEON SPEAKERS: WEF and AWWA National Officers

Tentative Technical Program (cont.)
Concurrent Sessions
Thursday April 21, 1994
1:00 - 4:30 PM

	Session A:	Session B:
1:00 PM	Cryptosporidium: How it will Affect Montana Water Systems	Pollution Prevention or EPA Risk Analysis
2:00 PM	Problems and Solutions: D/DPD Rules	Montana's Cross Connection Program
2:45 PM	BREAK	
3:00 PM	The Montana Safety Culture Act - Chip McKenna, MMIA	Beyond Secondary Standards: The Biological Impacts of Nutrient Enrichment of Natural Waters
3:45 PM	Chlorine Scrubbing, Chemical Handling, and the New Uniform Fire Code - Alden Beard	A Unique Approach to Managing the Clark Fork/Pend Oreille Watershed - Ruth Watkins, Coordinator Tri-State Implementation Council
4:30 PM	No-Host Hospitality Hour/Banquet and Theatre	

Concurrent and Joint Sessions
Friday April 22, 1994
8:00 - 11:30 AM

	Session A:	Session B:
8:00 AM	How To Enhance Your Communication Skills	Women and Minorities: Enterprising People in the Water Profession (A Panel)
9:00 AM	Bioremediation - Bob Kearns, CEO of Mycotech, Butte	Implementing DBE in Montana - Misty Hammerbacker, Dept. of Highways
9:45 AM	BREAK	
10:00 AM	A CWA/SDWA Reauthorization Report from Senator Baucus' Environmental Public Works Committee - Jo Ellen Darcy, Washington D.C.	
10:30 AM	The True Costs of Environmental Regulations: Who Pays? - Panel Discussion	
11:30 AM	Joint Business Luncheon	

1994 ANNUAL CONFERENCE

MSAWWA & MWEA

April 20, 21, and 22, 1994
COLONIAL INN - HELENA, MONTANA

"WINDS OF CHANGE"

MONTANA'S GROWTH IMPACTS RESOURCES

REGISTRATION

Admission to all meetings and functions will be by registration badge only. Make sure you register so you can attend all meetings

REGISTRATION FEES

Preconference Seminar: Wednesday, April 20 $30

8:30 - 9:00 - Registration
9:00 - 12:00 - "Confined Space Safety" $15
12:30 - 1:00 - Registration (PM only)
1:00 - 4:00 - "Excavation Safety" $15*___
or ASARCO Treatment Plant Tour $15*___
*Please indicate which you will attend

Conference - April 21 & 22

7:00 a.m. - Registration

Member, General Registration $85
Includes two luncheons, banquet, theatre and dance

Non-Member General Registration: $95
Includes two luncheons, banquet, theatre and dance

Spouse's Registration: $28
Historic Helena Tour, two continental breakfasts, Thursday Luncheon downtown, banquet, theatre and dance.

Life Member Regtistration: $60

One Day Registration:
Members $60
Non-Members $70
Includes one luncheon.

Student Rate: $20
Does not include meals.

Additional Luncheon Tickets - *please indicate number;* $10
Thursday _____ *Friday* _____

Additional Banquet Tickets - *includes theatre & dance.* $25
Please indicate number: _____

TOTAL AMOUNT OF CHECK FORWARDED: $ _____

If you have guests, please register them and obtain tickets.

CONTINUING EDUCATION CREDIT

Continuing education credits are offered for all attendance at the conference. See envelope in registration packet for details.

Non-Members joining now please enclose completed membership application and one year's dues; then register as a member.

ALL REGISTRATIONS RECEIVED BY MARCH 31 ARE ELIGIBLE FOR A GRAND PRIZE DRAWING!!!

REGISTRATION FORM

Registration Information is Requested by March 31, 1994

Please make Check Payable To:

MSAWWA/MWEA and mail it along with the following information to:

MSAWWA & MWEA
ANNUAL CONFERENCE
C/O DON ALLEN & ASSOCIATES
Executive Secretary, MSAWWA
P.O. Box 642
Helena, MT 59624
Phone (406) 443-7531 • Fax (406) 443-2439

Name: _____
(Last) (First) (Initial)

Title: _____

Organization: _____

Mailing Address: _____

_____
City State Zip

Phone: _____ Fax: _____

Spouse/Guest Name (if attending): _____

_____

1994 PRECONFERENCE SEMINAR Wednesday April 20, 1994
Colonial Inn, Helena

CONFINED SPACE ENTRY, FOLLOWED BY EXCAVATION SAFETY OR ASARCO TREATMENT PLANT TOUR

So many requests were received, we decided to sponsor three options! Select any one session or join us all day for seminars that fit your needs and interests!

EXCAVATION SAFETY:

Whether you are a large or small system, join us for a review and discussion of what you need to know about safety in and around trenching and excavation projects. State Labor and Industry safety officials will guide us through the safety essentials of these potentially dangerous work situations.

Registration Fee: $15.00
Time: 8:30 am Registration, 9:00 – 12:00 Seminar

CONFINED SPACE ENTRY:

Failed rescue attempts more than double the annual number of confined space fatalities. New OSHA rules established "Permit Required Confined Spaces" to help prevent these accidents. This training will include employer requirements for "permit required confined spaces" and more.

Registration Fee: $15.00
Time: 12:30 pm Registration for afternoon-only participants
1:00-4:00 Seminar

ASARCO SMELTER TREATMENT PLANT TOUR:

East Helena is home to one of the few remaining lead smelters in the world. Join us for an afternoon tour of how this facility has recently upgraded their treatment processes to meet and exceed strict water quality standards.

Registration Fee: $15.00
Time: 12:30 pm Registration for afternoon-only participants.
1:00-4:00 Tour (Meet at the Colonial Inn)

Lunch is on your own. Use the Registration Form provided for the Joint Conference to register. You do not have to attend the Joint Conference to attend these sessions. Be sure to indicate on the registration form which sessions you will attend so we can make appropriate arrangements. *Each Session earns 0.275 CECs.*

A Letter from Rick Cottingham, Water Quality Specialist

Dear Public Water Supplier and Other Interested Persons:

Congress is currently pursuing a major step toward helping water systems finance capital improvements needed to maintain high water quality and system reliability.

There have been two such bills introduced recently in the House of Representatives that would create a Drinking Water State Revolving Funds. These bills - HR 1701 (Waxman) and HR 1865 (Mineta) - would authorize the Environmental Protection Agency (EPA) to create and administer a funding program for public water systems that would be modeled much like programs to fund wastewater treatment improvements. Although different in some aspects the concepts in both bills are similar, including:

(1) Providing federal funds to state-operated financial assistance programs, which would provide low-interest loans, and possibly grants in individual circumstances;

(2) Focus on the new treatment and other costs being generated by the Safe Drinking water Act requirements;

(3) permitting the states to use some of the money for technical assistance to water systems, including monitoring and sampling;

(4) requiring and permitting the use of money to consolidate small water systems into larger more economical ones.

Even though the Clinton administration has not sent Congress a specific bill, the EPA has issued a "Statement of Principles" outlining support of such a program. Furthermore the Clinton administration has requested that Congress appropriate $599 million in the next fiscal year (starting in October,1993) for such a program, and $1 billion each for the next four years. If Congress appropriates these amounts then Montana would receive a considerable amount of this for this states water systems.

These proposals are a outright recognition by the Congress to the public health significance of the U.S. water systems, and the need for federal Monies to help the systems meet the mandates of the new federal requirements. Right now Congress is making decisions on which programs to fund as part of next years budget. Now is your chance to let Congress know about the challenges and the difficulties that water systems are facing, and the even greater ones that are foreseen in the near but not to distant future. If so, you should contact your Montana Congressional Representative and Montana's two Senators, <u>immediately</u>, and tell them how your system is affected, and specifically how HR 1701 or HR 1865 would enable you in meeting your obligations as a water supplier for the state of Montana.

GROUND WATER PROJECT UPDATES

by Carolyn V. DeMartino, WQB

Clark's Fork Yellowstone Valley Project

Fieldwork for the "Nonpoint and Point Source Demonstration Project of Wellhead Protection for Alluvial Aquifers Within the Clark's Fork Yellowstone Valley Project has now been completed. Personnel from the Department of Health and Environmental Sciences Water Quality Bureau conducted Fall water sampling for the Clark's Fork Yellowstone Valley Project during September and October 1993. Approximately 167 water samples were collected during this phase of the project. A total of 332 water samples have been collected for this project from two surface water sites, seven public water supply wells, and ten private wells. In December 1993, the DHES Chemistry Laboratory Bureau completed the analyses for the water samples. Although the analysis results still need to be interpreted for the project report, no agricultural chemicals have been detected in the water samples. One of the goals of the project was to determine if pollutants such as agricultural chemicals were present in the valley drinking water supplies.

The Montana State Library Natural Information System has been contracted to create a map showing the Clark's Fork Yellowstone Valley and a more specific map of the town of Bridger. Information gained by doing the study including location of streams and irrigation ditches, sampled wells, major roads and streets, potential sources of pollution, and recommended wellhead protection areas will be indicated on the maps. The maps will be included in the project report. The project is scheduled to be completed this summer.

Statewide Inventory and Characterization of Animal Waste Management and Disposal Areas

The Department of Health and Environmental Sciences Water Quality Bureau received funding to do a project that would help to identify which animal waste disposal areas at confined animal operations may impact surface water and ground water, especially that which is used for human consumption. Fifty-four percent of all Montanans and ninety-eight percent of rural Montanans depend on ground water as the source of their drinking water.

Land and Water Consulting has been selected has the contractor for this project and contract negotiations are currently taking place. An important feature of this project will be a project advisory committee. The advisory committee has been organized and includes a representative for pork producers, for beef cattle producers, for dairy cattle producers, a Montana State University Extension Service representative, a Soil Conservation Service representative, and the DHES Ground Water Program Manager. Advisory committee members will advise the Water Quality Bureau and Land & Water Consulting by reviewing and commenting on the sites selected for the field site assessments, discussing data evaluation methods, and reviewing and commenting on the draft project report. The first advisory committee meeting will take place in February.

The project will focus on confined animal operations that include: 250 or more beef cattle, 200 or more dairy cattle, 850 or more swine, or a combination of livestock that would produce manure wastes containing a minimum of 85 pounds of nitrogen per day. These numbers were selected so that a greater amount of information could be compiled. The project will hopefully begin late in late January. If you would like more information about the project or would like to participate in project please contact:

Carolyn DeMartino
Department of Health and Environmental Sciences
Water Quality Bureau
Cogswell Building, Rm. A-206
Helena, MT 59620
Phone: 444-5343

2nd Annual Spring Water School

March 16, 17, & 18, 1994
Park Inn, Lewistown, MT

The 2nd Annual Spring Water School will be held in Lewistown the middle week of March this year. This three day seminar is designed for entry level and experienced operators and managers. Topics and presentations will specifically target professional growth of the small system operator or manager. It will feature an array of topics from wells, distribution systems and lagoons to process control of water treatment and activated sludge facilities.

Preventive maintenance, safety, and current regulations are other examples of topics to be covered. Basics of surface water treatment, well systems and distribution system operators will be emphasized. Special Operator Study (SOS) classes will be offered in the evenings after sessions to aid those planning to take the exam following the water school. This school will feature expert speakers from the Water Quality Bureau, Local Governments, and the professional Community. Advanced surface water treatment plant operators are encouraged to attend other seminars better designed to meet their needs, such as the Advanced Surface Water Treatment Seminar in either Billings or Great Falls in May.

CEC's:	1.5
Fee:	$55.00
Sponsor:	METC (454-2728 or 444-2406)
Date and Location:	March 16 - 18 Lewistown

GAO Reports Inadequate Sanitary Surveys Jeopardize Health

A recent General Accounting Office (GAO) report has found that inadequate sanitary surveys are placing many of the nation's water systems in jeopardy of contamination.

Sanitary surveys, or periodic inspections, help ensure that public water systems are meeting federal and state quality standards and can help identify problems before they become serious. While the U.S. Environmental Protection Agency (EPA) has not established minimum requirements for sanitary surveys, the agency recommends that they cover all of the components of a water system, including its water source(s), facilities and equipment, as well as operations and maintenance. The EPA also recommends that a complete evaluation be conducted at least once every three years.

In preparing the April 1993 report titled "Drinking Water: Key Quality Assurance Program is Flawed and Underfunded," GAO officials surveyed state drinking water programs; interviewed federal, state, and local officials, and reviewed sanitary surveys in four states.

The GAO's analysis found that sanitary surveys vary in the way they are conducted and documented. For example, sanitary surveys conducted in 45 states did not evaluate one or more of the major elements recommended by EPA, including inspections of the water distribution systems and reviews of operators' qualifications.

In addition, some states do not require that results of the surveys be documented and the results sometimes are interpreted inconsistently by inspectors. For example, two inspectors in New Hampshire rated differently the absence of screens used to keep birds and insects out of storage tank vents. One inspector said it was "significant," while the other did not.

"This difference in the rating is important," says the GAO report, "because significant deficiencies require the water system's owner to notify the state about the corrections." Other, nonsignificant, deficiencies are not checked for corrections until the next scheduled survey.

Most drinking water officials agree that conducting routine evaluations of public water systems is essential to ensure safe drinking water; however, they are being conducted less frequently than the recommended three years. In some cases, according to the GAO report, "consumers are getting their drinking water from systems that have not been inspected in 10 or more years."

Most state drinking water officials say they are unable to meet the recommended three-year inspections because of the "need to perform higher priority work that is required by the Safe Drinking Water Act, staff shortages and financial constraints," says the GAO report.

Because of these limited resources, state officials say only deficiencies that actually affect water quality can be followed up. Even if states perform the sanitary surveys as the EPA requires, there is no guarantee that the problems will be corrected because the EPA does not monitor deficiencies.

Of the 161 public water supply sanitary surveys examined by the GAO, about 80 percent disclosed deficiencies, including problems as serious as cross connections, where leakage from contaminated wastewater was mixed with drinking water. Sixty percent of these surveys identified problems that were found in previous surveys, but remained uncorrected, and 75 percent of the 45 states studied have no program to assure that deficiencies are ever corrected.

To improve the effectiveness of sanitary surveys, the GAO recommends that the EPA:

- work with states to establish minimum requirements regarding the frequency of sanitary surveys and how they are conducted and documented;
- assist states in developing criteria that will help inspectors interpret survey results and identify the appropriate actions to take when specific types of deficiencies are detected; and
- increase the agency's efforts to provide formal sanitary survey training to state inspectors.

SPRING INFRASTRUCTURE SEMINARS TO BE HELD

March 23/24 - Billings
March 30/31 - Missoula
April 5/6 - Great Falls

The Montana Water Environment Association will be hosting Environmental Infrastructure Seminars designed to aid communities in the planning, funding, and successful construction of environmental infrastructure facilities.

Mayor, commissioners, city managers, public works directors, city engineers, operators, and other community officials and regulators will receive useful tips and information to help prepare them for their upcoming projects. The seminars have been designed to allow attendees ample opportunity discuss projects and questions with potential funding and regulatory agency personnel.

For more information contact Scott Anderson, Water Quality Bureau (406) 444-2406.

CONDENSED AGENDA

◆ ◆ ◆ ◆ *DAY ONE* ◆ ◆ ◆ ◆

PLANNING TO SUCCEED - THE BASICS

Planning Overview
- Hiring Your Engineer

Technical Planning Aspects:
- Facility Planning
- Alternative Analysis
- Regulatory Requirements (Including Environmental)

Financial Planning Aspects
- Financial Plan
- Public Involvement
- Financial Program Coordination - WASACT Plan

PANEL DISCUSSION - MAJOR FUNDING PROGRAMS AND OPTIONS IN MONTANA

- INTERCAP
- DNTR
- CDBG
- SRF

PANEL DISCUSSION - CONTINUED

- TSEP
- Farmer's Home (RDA)
- Bonds

BUILDING IT RIGHT

Construction: Overview
- Bidding and preconstruction considerations
- Construction management and administration
- Cost control, change orders,

Contractor Relations - "Partnering"

FUNDING INFORMATION EXCHANGE

Funding agencies available for informal question-answer

◆ ◆ ◆ ◆ *DAY TWO* ◆ ◆ ◆ ◆

PROTECT YOUR INVESTMENT

Facility Operation & Maintenance
- Budgeting
- Maintenance

TRUE STORIES OF SUCCESS

- Own You Project
- Operator Involvement

PANEL - VOICES OF EXPERIENCE

FINANCIAL PROGRAMS APPLICATION SESSIONS

TREASURE STATE ENDOWMENT PROGRAM

COMMUNITY DEVELOPMENT BLOCK GRANT

Safety...from start to finish!

from the Editor

As our Cities grow and we've all become caught up rushing to get everything done in the day that's come to be expected of us, we sometimes act unconsciously without stopping to look at the big picture. Whether it be out of taking shortcuts or avoiding inconvenience we often put our own lives at stake as well as that of our coworkers.

Sometime ago, two men were killed when their scaffolding from which they were painting collapsed inside a storage tank. One of these men was the company safety manager.

These men were painting the inside of a water tank when their scaffolding collapsed and they fell to the bottom of the tank. Being stranded there, they were overcome by paint fumes and eventually lost consciousness. They were not wearing the fresh air supply that was available to them.

The water companies contract for the project specified that workers wear air hoods connected to external air compressors. The air compressors were hooked up and pumping to the hoods hung on the scaffolding in the tank. The workers found these cumbersome had decided not to use them. Instead one wearing a thin gauze masks intended to filter dust and paint particles while sand blasting. The other man wore nothing.

The Safety Manager, who was outside handling the compressor and paint feed. Realizing that the scaffolding had collapsed , he asked a nearby neighbor to summon police and fireman. Then he rushed into the tank with no mask and he, too, was overcome by fumes and lost consciousness.

The three men lay unconscious for hours as rescue efforts of more than 100 police officers, fire fighters, and volunteers were hampered by bad weather. Intense fog, rain, and high winds made climbing the tank difficult and restricted the use of machinery. Several men collapsed from fatigue.

Inside the tank conditions were worse. Because of the fumes the rescuers could only use battery powered lighting that was hand-held. Fearing that sparks might ignite the fumes causing an explosion. One volunteer worker was overcome by fumes 65 feet above the tank floor. This required rescuers to stop and pull him out before continuing.

A veteran mountain climber spent 5 hours setting block and tackle equipment , tying knots, adjusting straps on stretchers, and attaching safety lines and double safety lines. The interior of the tank was described as "a blinding white such as an alpine blizzard-completely and nauseatingly disorientating". Fans that had been set up to pull in fresh air into the tank created a deafening noise.

When the veteran climber finally reached the floor of the tank he stepped into the wet paint and began to slide towards the center to the uncovered 4 foot opening to the feeder pipe in the center of the center of the floor. Miraculously he was able to stop sliding, unfortunately the man behind him was not.

As the rescuers watched helplessly the man, still out of reach, stirred, rolled over, and in the slippery paint slid into the feeder pipe. He plunged 110 feet to the bottom.

The safety manager who was rescued nearly 10 hours after the original incident died the next morning. the man that wore no mask miraculously survived.

Three men died that day because two men didn't want the inconvenience of wearing cumbersome hoods and had removed the floor grate to the feed pipe. We can all think of instances where we put our personal comfort or inconvenience ahead of our own safety. Hopefully we can learn from these three mens misfortune to stop and think of what could happen

Reflections from the

60th Annual School

for Water and Wastewater Operators and Managers

The annual school was held September 27-30, 1993 in Bozeman on the Montana State University Campus. It was attended by 192 operators and managers from throughout the state.



Of the 192 Operators that attended, there were 122 examinations given on October 1, 1993, of which 83 scored successfully. Congratulations to these operators!

Registration strongly resembled the draft!



1993 Water School attendance tested the capacity limits.

Managing Mosquitoes Without Poisons

By Carrie Swadener

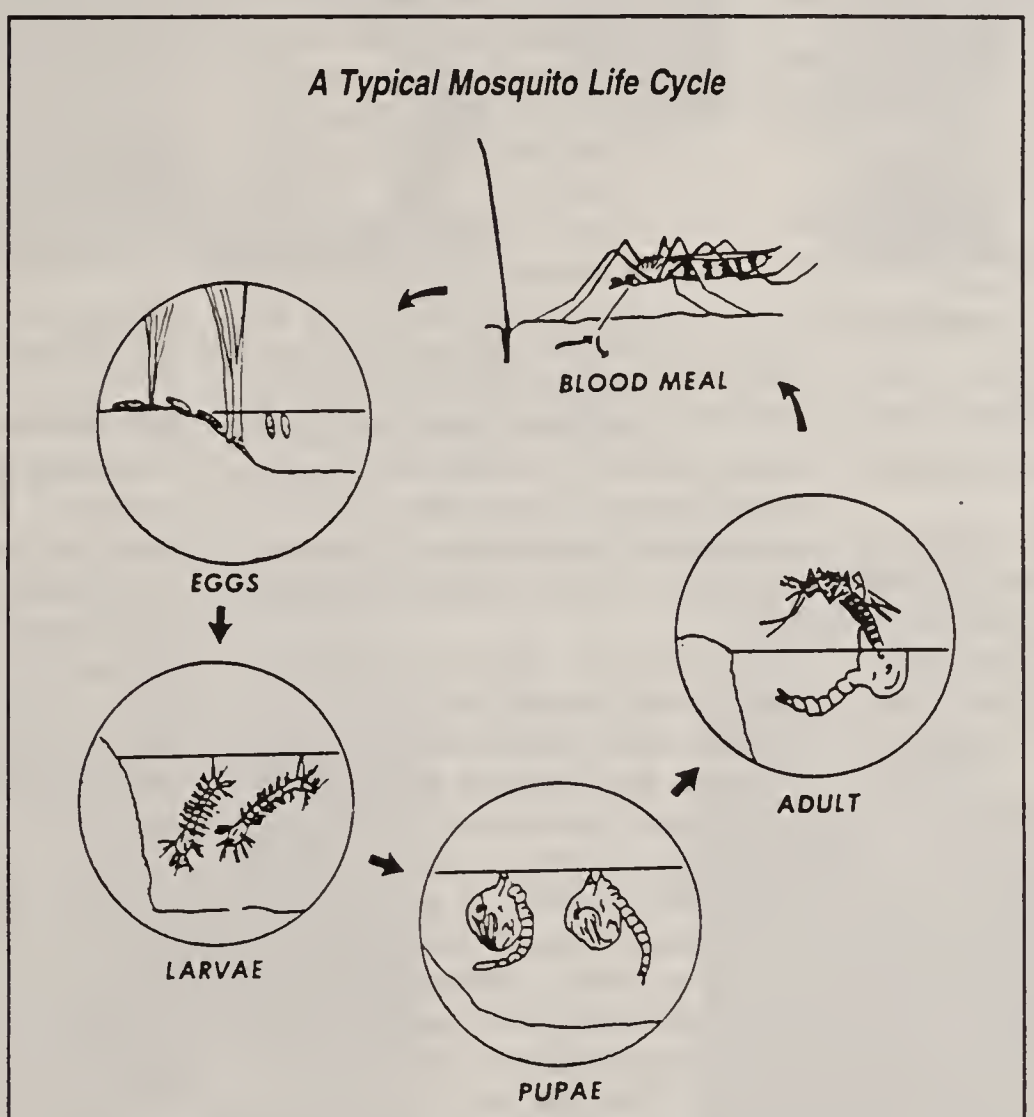
Mosquitoes form a major part of the diets of fish, birds, bats, and other wildlife. Despite the presence of mosquito-eating wildlife, mosquito populations often reach levels that annoy people and domestic animals. North American mosquito control agencies spend more than $80 million every year in attempts to reduce mosquito populations. Residents spend more than that on a variety of insecticides, repellents, screens, and other products directed against mosquitoes.[1]

Mosquitoes are indeed among the more annoying insects, whether because of their capacity to spread diseases, their itchy bites, or their tendency to buzz around one's ear. However, there are measures you can take to reduce mosquito populations around your house without poisoning yourself in the process.

Biology

Mosquitoes are actually a kind of fly. There are over 3,000 species in the culicid, or mosquito, family. Adult mosquitoes may be distinguished from other flies by the scales on their wings and the presence of a long piercing mouthpart, or proboscis. Male mosquitoes have long feathery mouth parts and feathery antennae, while female mosquitoes do not.[1]

Like many insects, the mosquito life cycle has four stages: egg, larva (or "wriggler"), pupa (or "tumbler") and flying adult. Some species of adult female mosquitoes require protein from human or animal blood to produce mature eggs. Therefore it is only the female mosquito that feeds on blood.[1]



Source: Massachusetts Audubon Society. 1991. *Learning from experience: Toward an environmentally sound program for Eastern Encephalitis control in Massachusetts.* Lincoln, MA. (July.)

Until reaching adulthood, mosquitoes spend their lives in still water. Mosquito management is most effective during the aquatic larval stage.

Some mosquito eggs are laid singly in water or on soil surfaces near temporary water sources; other eggs are laid in groups like rafts floating on the water surface.

All mosquito larvae require water for the 4-10 days of their development. Most larvae breath from the water surface. After four instars, or developmental stages, the larva enters the pupal stage, then emerges as an adult.[1]

Monitoring

The first step in any control program is deciding when treatment is necessary. This decision involves setting a damage threshold, a level of damage (or annoyance) that is tolerable. Ask yourself, "How many bites or buzzes can I put up with?" Then assign an action level, or point at which control actions are initiated. The action level should be set at some point before the damage is intolerable, since most least-toxic mosquito control techniques are aimed at the mosquito larvae.

This can be difficult because every person has a different level of "intolerable damage." Some people are more attractive to mosquitoes. Some people react more seriously to mosquito saliva (the chemical that causes mosquito bites to itch and swell) than others. It is more difficult in areas where mosquitoes carry and transmit diseases like viral encephalitis and canine (dog) heartworm (two of the more common mosquito-borne diseases in the United States). In such cases, the damage is not only annoyance, but illness. However, the damage threshold is the key to realizing that population management, not eradication, is the goal.

Larvaciding

Most traditional approaches to mosquito control have been directed towards killing adult mosquitoes. However, since mosquito populations are more concentrated as larvae, and since most larvacides are more specific to

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Carrie Swadener is NCAP's information services coordinator.

the mosquito than broad-spectrum adulticides, directing control efforts against the larvae is often more fruitful and less ecologically harmful.[2] Larvaciding centers around the water in which larvae live. Larvae do not develop in water sources with a current (like streams and creeks), but any source of standing water is a potential source of mosquito larvae.

Common Breeding Sites

air conditioner drain outlets	plastic wading pools
birdbaths	rain barrels
boats that have not been drained	saucers under potted plants
cans, jars, and other containers	septic tanks
cisterns	standing water in tire ruts
clogged roof gutters	street catch basins and gutters
dripping outdoor faucets	stumps
leaf-filled drains	tree holes
leaky pipe joints	utility meters
old tires	watering cans, buckets
ornamental ponds	watering troughs
over-irrigated lawns and fields	wells
poorly constructed cesspools	wheelbarrows or carts

Source: Reference #1

If you have a mosquito problem around your home, chances are the mosquitoes are breeding in your backyard. The elimination of all standing water is the best way to reduce mosquito populations. (See "Common Breeding Sites," above.)

If the water source cannot be drained, several techniques may be used to kill mosquito larvae. Stocking with predators such as goldfish or mosquito fish (*Gambusia affinis*) will reduce the number of larvae. Use caution in introducing these fish to natural bodies of water, as they are aggressive predators that compete with and prey upon native fish and insect species. Also, provide an area for the fish to hide from raccoons and other predators.[1]

Another method of larval control involves applying a suffocating film on water surfaces. When the larvae tries to break through the water surface to breathe, the film clogs the breathing tube and suffocates it. One larval suffocating product is called Arosurf (Sherex Chemical Co., Inc. 800/848-7452) . It is a monomolecular surface film that is effective against larvae, pupae and some eggs. To be most effective, it must cover the entire water surface, and surface disturbances must be minimized. Larvacidal action is not immediate with suffocating films.[1]

The bacteria *Bacillus thuringiensis var. israelensis*, or B.t.i., produces a toxin fatal to mosquito and blackfly larvae, and is available in a wide variety of products for mosquito control. A commonly used household product is the Mosquito Dunk (Summit Chemical Co., 800/227-8664), a solid that releases B.t.i. into a water source for up to 30 days.[3] B.t.i. is also available in a variety of other liquid spray products, such as the products Bactimos (Biochem Products, 517/694-2954; PBI Gordon Corp., 800/821-7925) and Vectobac (Abbott Laboratories 312/937-5105). B.t.i. is not persistent, so a single application will not kill more than one generation of larvae. B.t.i. must be consumed by the larvae to cause disease, so it is not effective against eggs or pupae.[1] It may harm other species of aquatic flies.

The insect growth regulator methoprene mimics an insect growth hormone and prevents the emergence of adult mosquitoes from pupae. Methoprene is available for mosquito control in Altosid products (Zoecon Corp., 800/527-0512). It is available in slow-release briquets and is also available as a liquid.[1] Methoprene has a low acute toxicity to mammals and is not highly persistent, but may have adverse effects on fish, and is highly toxic to freshwater, estuarine, and marine invertebrates.[4]

Adulticides

Mosquito control strategies directed towards the mosquito larvae should be useful in reducing adult mosquito populations around your home. However, there may be times when you need to control adult mosquitoes. Focus on keeping mosquitoes out of the house and minimizing exposure to them while outdoors.

Keep screens on windows and doors in good repair. Seal any gaps between the screens and the window or door frame. Caulk or seal any other possible entry sites. When sleeping outside in mosquito infested areas, consider using a mosquito net.[1]

Mosquitoes are attracted to dark clothing, carbon dioxide, and animal sweat. People with warm and damp skin are more likely to be bitten than those with dry skin. When you are outside at prime mosquito feeding times (late dusk and early evening), wear thick, protective clothing.

When wearing mosquito repellents, apply them to clothing rather than bare skin. Apply them only to exposed skin, and wash them off after returning inside.[1,5] Many common repellents such as Off! and Cutter products contain N,N-diethyl-m-toluamide, or DEET, which may cause adverse neurological effects and is an eye and skin irritant.[6] Other non-DEET that repel mosquitoes are Natrapel (with 10 percent citronella), Bug-Off, and Avon's skin care product Skin-So-Soft.[5]

Conclusion

By using a combination of these methods, it should be possible to reduce the mosquito population around your home. While these methods focus on mosquito control techniques useful to the private citizen, many of the same techniques are useful on the community level. By putting most energy into control of the mosquito larvae, techniques are more selective and have fewer negative effects on humans, wildlife and the environment. Larval control is a long-term investment that minimizes human annoyance while maintaining healthy ecosystems. ■

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6. Robbins, P.J. and M.C. Cherniack. 1986. Review of the biodistribution and toxicity of the insect repellent N,N-diethyl-m-toluamide (DEET). *J. Toxicol. Environ. Health* 18:503-525.





Donna Jensen presented AWWA Awards to the City of Helena and Lockwood Water Users Association. Accepting the awards were Jay Frandsen and Mel Kershaw of the 10-Mile Plant for Helena and Rick Russell for Lockwood.



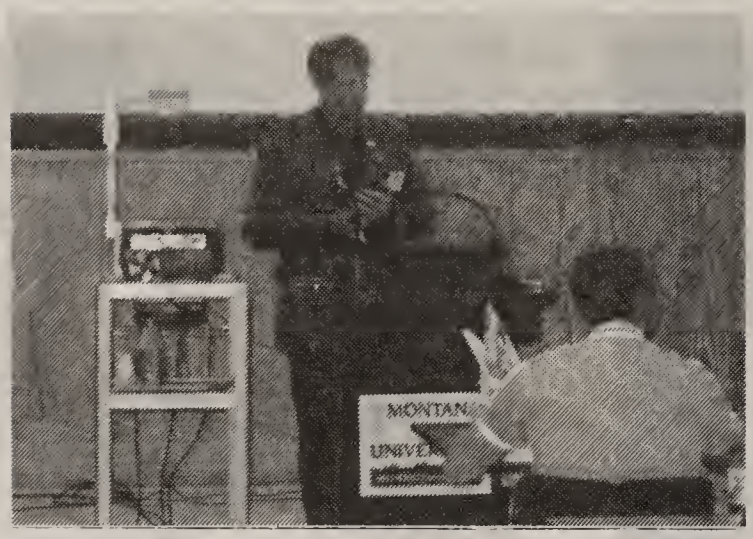
Jim Melstad presented Donna Jensen with an award for Meritorious service for 7 years of dedication with the Water Quality Bureau.

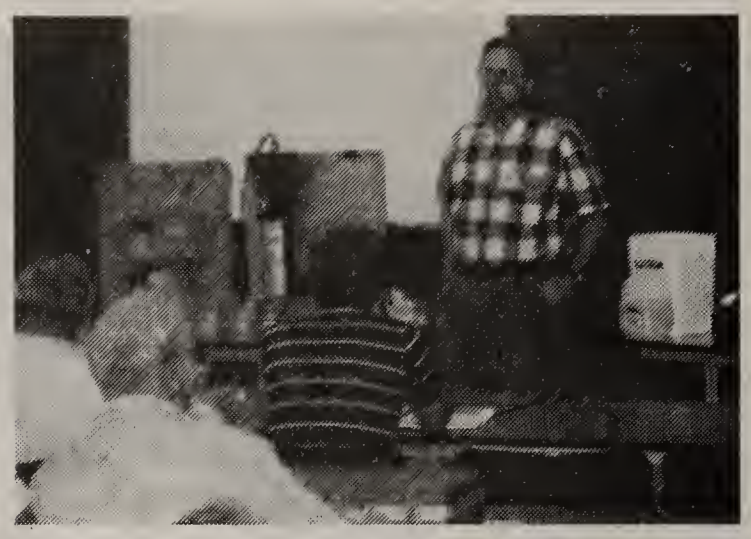


Donna Jensen presented Rosie Fossum with an Appreciation Award for 16 years of dedicated service as Certification Officer.

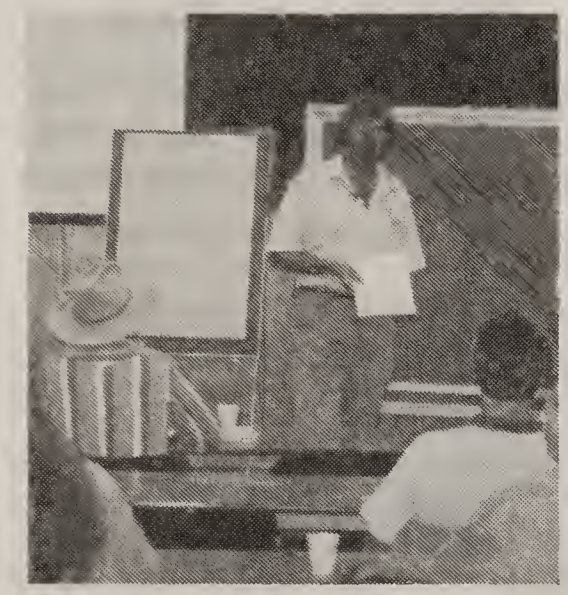
Both Donna and Rosie Will be Greatly Missed at the WQB.

Watch For Future Guest Appearances!!!



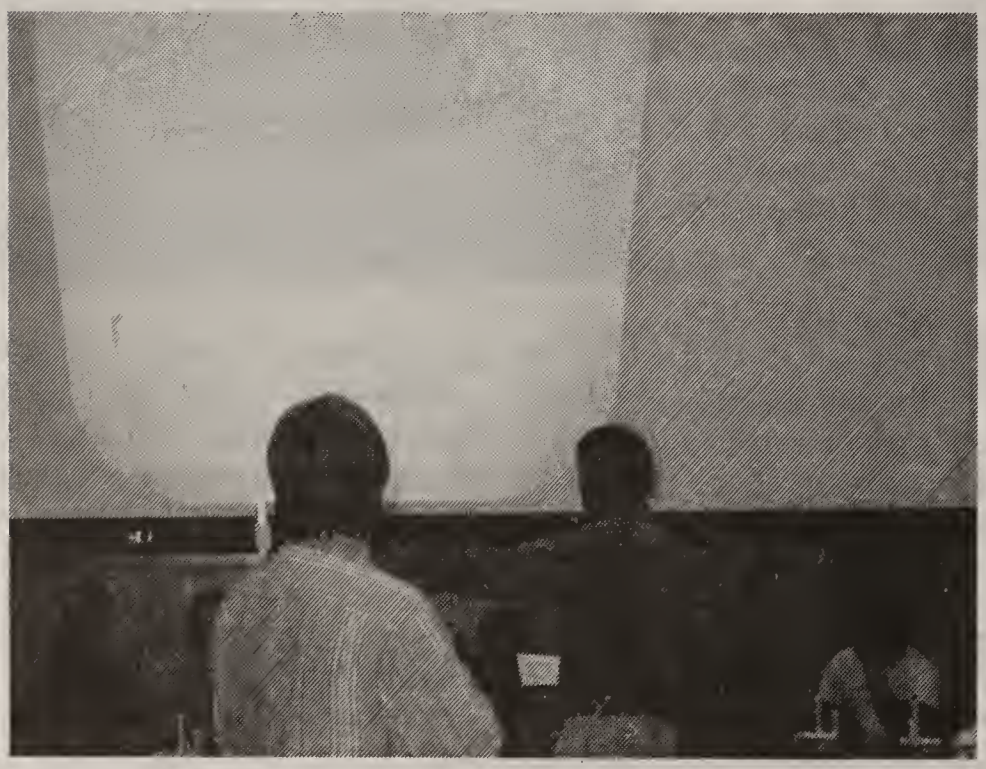


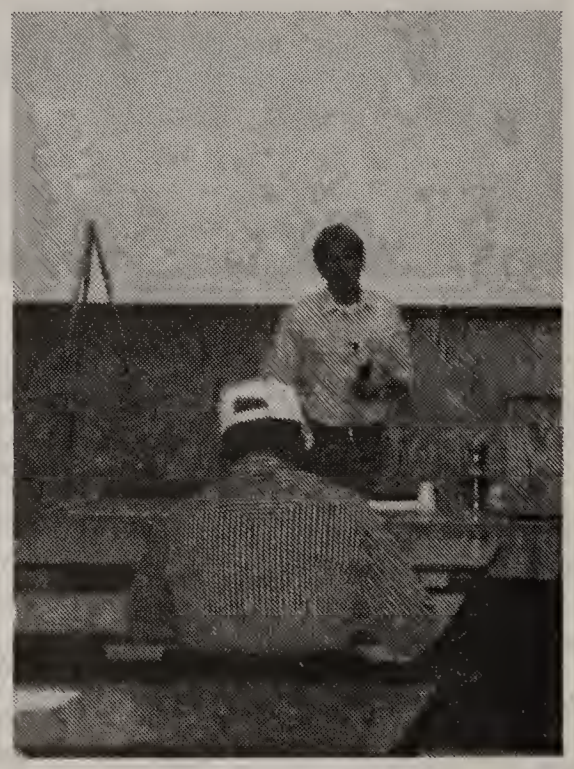
Classes were Emergency Planning and Calibration of Turbidimeters



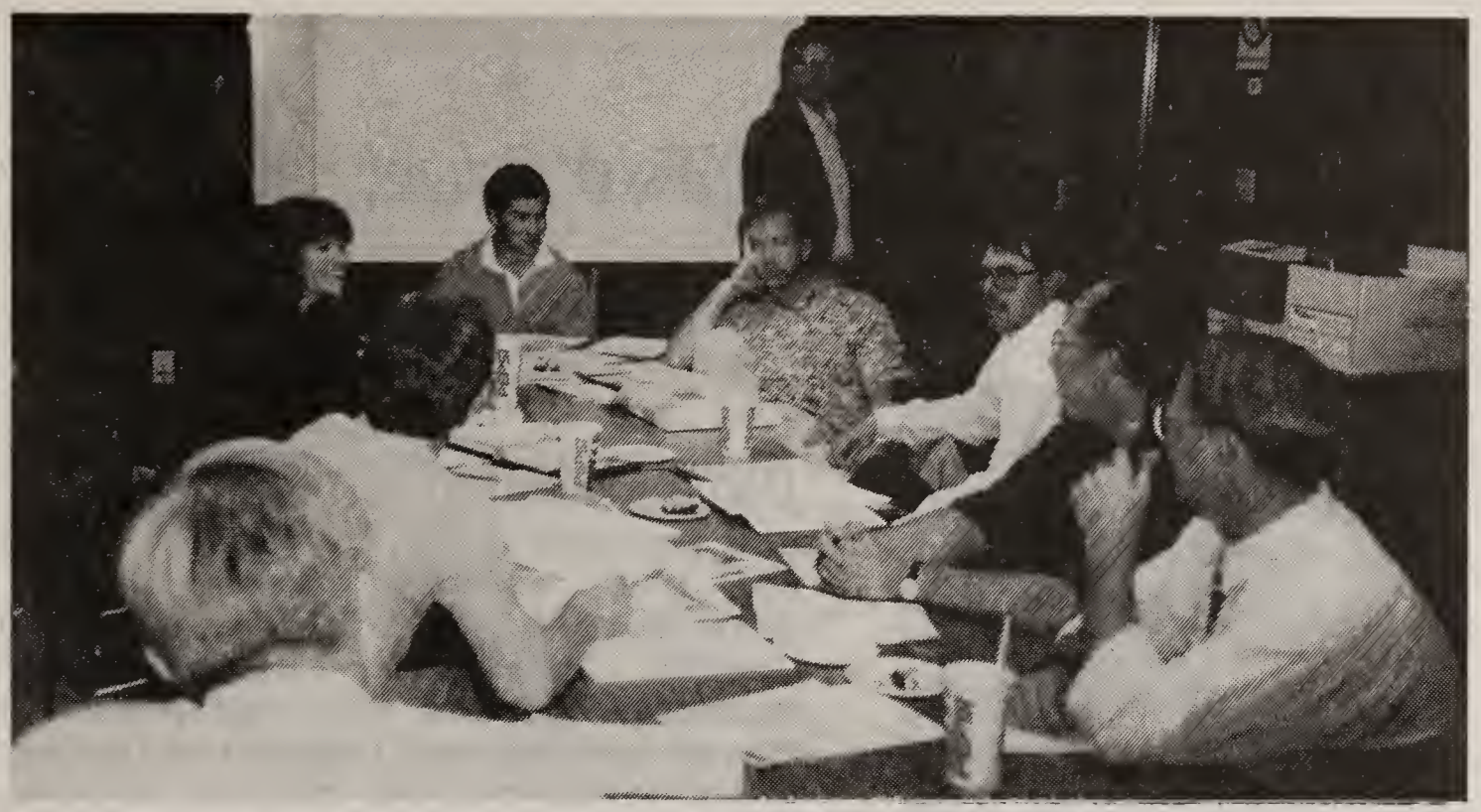


....Protecting the Environment and Safety Issues and....





A Certification Bowl Contest for prizes and Sanitary Inspection!



The Montana Water Environment Association
Executive Board hard at work



Warren Jones makes a point
to a skeptical Rick Cottingham



The MAD Chemist (Bob Christeck)
ready to blow something up!!



Marc Golz...Nobody really knows
what he is thinking at this moment

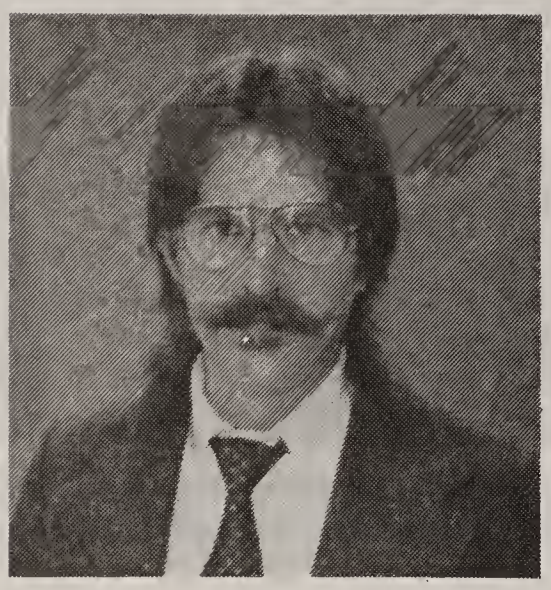


Dorothy Bradley ready to
sign autographs now

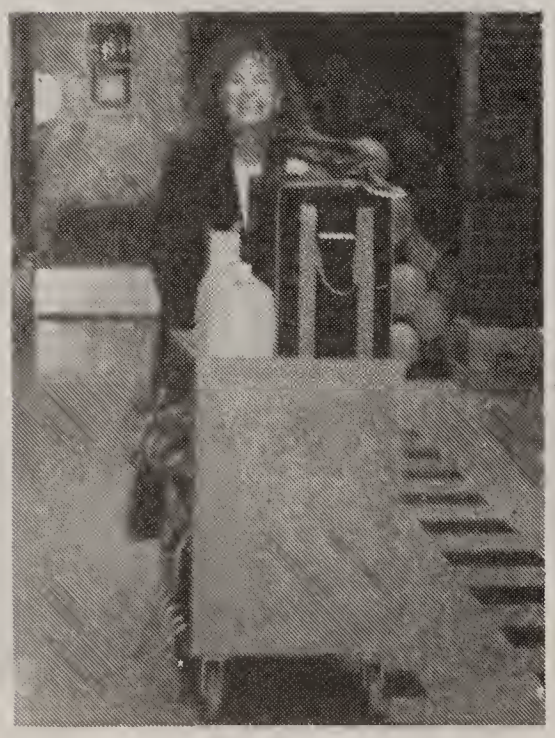
New Faces At Water School



Dorothy Bradley brings fresh ideas and perspective to the Water School as she assumes the duties of director of the Water Resources Center replacing Howard Peavey. Dorothy started her new position at the Water School registration before being assigned an office on campus. The MET Center and the Water Quality Bureau are looking forward to working with Dorothy.



Dr. Warren Jones, a friendly graduate student (at one time), assumed Howard Peavey's duties as MSU liaison and did an exceptional job of coordinating rooms, equipment, and the other 101 required needs of an operation such as Water School!



Jan Boyle, coordinator of the Montana Environmental Training Center joined MSU and the Water Quality Bureau this past year as a sponsor of the 60th Annual Water School. Jan's experience with Environmental Training and adult teaching will truly be an asset to future Water schools.

National Wastewater Facility O&M Award Winner
by Doris Roberts, NMC

Congratulations, Chinook, Montana! The Chinook Wastewater Treatment Facility won the Environmental Protection Agency's (EPA) National Operation & Maintenance Excellence Award for 1993 in the small-secondary (1.0 MGD or less), wastewater treatment category. Chinook competed against all the facilities that had received the EPA's Regional O&M Excellence Awards and was rated the Best of the Best! The EPA presented the award to Marlene Doney, Superintendent of the Chinook facility, on October 2, 1993 at the National Water Environment Federation Conference held in Los Angeles, California.

In winning the award, Chinook was evaluated in the areas of permit compliance, maintenance and maintenance management of the wastewater facility and collection system, sludge management, laboratory and monitoring activities, financial management, staffing and training, energy conservation, public relations and community service, and water conservation activities. From the list, you can see that operation and maintenance involves more than going to the facility, running a few tests, and fixing some equipment. The EPA considers all areas that can affect what is coming out of the pipe.

So again, congratulations City of Chinook, Marlene Doney, and Richard Paugh, operator/maintenance.





Dynamics of "Adult Learning" in Environmental Training

by Jan Boyle, Coordinator
Montana Environmental Training Center (METC)

"You know, I really learned a lot at the last training workshop. Over coffee break, Joe and I talked about a process control problem at Joe's wastewater plant. I had a similar situation occur at my plant, and I offered Joe some ideas that our plant implemented to solve the problem."



I must have overheard this same scenario reiterated at least 50 times over the years of conducting METC water quality workshops. Respectfully, I've named this approach, **"Coffee Break Learning".** Most often this type of learning actually complements the workshop topic being addressed in that the topic stimulates "coffee-break" discussion between operators and then some operational problem being experienced by one of them is identified. A spontaneous exchange of information occurs, and a kind of 15-minute, troubleshooting, "jam" session initiates ideas that the operator may implement at his own plant to correct a problem. The training workshops bring water and wastewater operators together from all over Montana for instruction in water quality and other environmental topics. Workshops themselves can truly benefit from the rich, varied backgrounds of adult participants and from the potential power of their pursuit of some course of action together. Just as important is the fact that "Coffee Break Learning" offers workshop participants the opportunity to meet their peers face-to-face and exchange ideas.

Learning is a cooperative venture, a cooperative art, if you will. The emphasis is on people. Interactive discussion strategies allow the learners to react to the ideas, experiences, insights, and knowledge of their peers and to generate alternative ways of thinking and feeling. These same strategies provide the mechanism for learners to reflect upon their own experiences and to use adult education to determine what is significant and meaningful about these experiences.

Adults differ widely in their learning styles. Interactive discussion strategies can capitalize on the strengths of many learning styles and preferences that may not have been used in traditional, formal schooling. Much traditional schooling involved only print and aural modes of learning. All learning was expected to take place through reading, writing, and listening. Unfortunately, many adults learn best by verbalizing. The adult's

vast reservoir of experiences encourages and supports verbalization among adults as a means of acquiring or clarifying new information. Much of the research in teaching adults indicates that **active participation by the learner and meaningfulness of the content** are two constant factors influencing the effectiveness of the teaching/learning process.

Workshops bring people together in groups in order to develop specific competencies in the participants or to use the members' talents to resolve some common problem. That 15-minute coffee-break discussion between operators might well be considered a scaled-down version of a problem-solving "workshop"!

MONTANA SECTION OF THE AWWA MINORITIES'/WOMEN'S AFFAIRS Committee REPORT:

WE NEED YOUR HELP -

The Minorities'/Women's Affairs committee is a newly organized committee within the Montana Section of the American Water works Association. Luella Schultz is serving as the 1994 chairperson for the committee. The committee is seeking input from across the state of Montana on ways to increase minority, women and other protected groups involvement, participation and recognition in the field of water works. Our goal is to increase participation in MAWWA and training seminars and to increase recognition of minorities and women in the water industry. The committee is looking for new members and new ideas!

NOMINEES ARE NEEDED -

A **special award for leadership in the field of water works** is to be awarded at the 1994 Annual Conference of the Montana Section of the American Water Works Association. Nominees must be a minority or woman serving in a position in the water industry, for example a water system owner, operator, engineer, research person, laboratory, education or regulatory occupations. If you know of someone with outstanding job performance and community service you would like to recommend contact Luella Schultz at 444-4202.

TRAINING $ ARE AVAILABLE -

The Montana AWWA has committed money to provide training for minorities and women. To apply for a training scholarship to cover the tuition costs of a training seminar you would like to attend, contact Luella Schultz. The budget is very limited and awards will be made on an assessed needs/first come basis.

TELECONFERENCES - ARE THEY WORTH IT?!

The Montana Section of the American Water Works Association sponsored the Disinfection/Disinfection By-products Satellite Teleconference on October 15, 1993. Those that attended commented the seminar was a GREAT way to take in a national seminar without traveling out of Montana, but some folks remain skeptical about whether this format is worth it. After all, watching TV is no match for a face-to face speaker! Well, give a teleconference a try - you might be surprised. Satellite teleconferences provide experts in their fields (viewed on TV screens and accessible through no-cost telephone communications) and a quality of seminar not easily attended.

One big problem faced by all training entities in Montana is the high cost of getting nationally known speakers to participate in our seminars without costing an arm and a leg in fees and travel costs. With teleconferences, more speakers are provided and multiple "down-link" locations allow us to ease your travel burden and time away from work. Teleconferences allow us to "beam" these experts to you for reduced fees and at more convenient locations. This may be the wave of the future for obtaining immediate and essential information for our systems.

Catch the next one... it will be worth it!! (SEE REGISTRATION FORM IN THIS ISSUE)

October 15, 1993 AWWA teleconference, "Disinfectants and Disinfection By-products", was attended by 35 water operators and water quality professionals.





Questions from viewers are answered on the air. Cost for the calls from the downlink locations are at no cost to the participant.

AWWA SATELLITE TELECONFERENCE

PREVENTING WATERBORNE DISEASE: IS YOUR SYSTEM AT RISK?

FRIDAY, APRIL 8, 1994

The Montana Section AWWA will bring you this teleconference at three locations to reduce your travel time and time away from work. This seminar will be presented by national experts and authorities on Water Treatment, Waterborne Disease and Utility Operations. Learn about microbial contaminants and how to spot weak point in your system. This is a unique and valuable training event for anyone involved with public water supplies served by either ground water or surface water!

Date: Friday April 8, 1994 **CEC's:** 0.55

Time:

Registration Desks Open	8:15 a.m.
Telecast and discussion	8:45 - 2:45 (lunch included during telecast)
Adjourn	2:45 p.m.

Location: *Please check the location you plan to attend*

❑ Flathead Valley Community College
Learning Resource Center - Room 120
Kalispell, MT

❑ Great Falls Vo. Tech Center
Room 106
2100 16th Avenue South
Great Falls, MT

❑ Eastern Montana College
Special Ed. Room 162
Billings, MT

Registration Fees: $45.00 AWWA Members $50.00 Non-members

(all fees include lunch, refreshments and $15.00 participants manual)

THE MONTANA SECTION OF AWWA SINCERELY APPRECIATES THE FOLLOWING FIRMS FOR SERVING AS SITE SPONSORS FOR THIS SEMINAR. THEIR GENEROUS CONTRIBUTIONS TO THIS TELECONFERENCE WERE ESSENTIAL IN KEEPING YOUR REGISTRATION COSTS TO A MINIMUM.

Morrison Maierle/CSSA	Neil Consultants Inc.	HKM Associates
Kalispell Site Sponsor	Great Falls Site Sponsor	Billings Site Sponsor

Seats are limited at some locations so please register early to reserve a spot. **Registration must be received by March 10.** Payment in the form of Check or Purchase Order will be accepted. Please make payments to Montana Section AWWA Education Fund. Questions?? ... Call 443-3179. Return registration form to: MSAWWA Education Committee, c/o Donna Jensen, 197 Saddle Mountain Drive, Clancy, MT 59634.

Please Print. This page may be duplicated for additional registrants.

Name: _____

Address: _____

City/State/Zip: _____

Phone: _____ AWWA Member____ Non-member____

City of Sweeny Conducts Emergency Response Drill

You're the supervisor of your water system's water wells. It's 4:00 a.m. and your phone just rang. There's been an accident. An eighteen-wheeler collided with another vehicle and has overturned near your wellfield. It is leaking something profusely. The caller doesn't know what, except that it smells foul and stings the eyes. What are you going to do...?

The scenario actually happened. Well, not really. The city of Sweeny, Texas conducted a technological hazard drill to test its efficiency and ability in responding to contamination events, and to target areas of improvement. What follows is a narrative of the drill.

The place: Sweeny, Texas, located 17 miles north of the Gulf of Mexico and one mile east of the San Benard River. Population: 3297. The city's Main Street, FM 524, runs north and south through town. Most businesses are located here. The street is intersected in the center of town by FM 1459. The Missouri Pacific Railroad crosses FM 524 at the southern city limits.

The city draws its drinking water from three public water supply wells and is a participant in the Wellhead Protection Program. In fact, the city was the first in the state to adopt a Wellhead Protection Ordinance.

Preparations for the drill began on May 6, 1993. A tabletop exercise was held to determine the purpose, participants, and type of drill. Representatives from the Sweeny Emergency Management, Police Department, City Hall, and Volunteer Fire Department were in attendance. Also attending were the Sweeny Fire Marshall, Old Ocean Volunteer Fire Department, Sweeny Community Hospital, and Amoco Production Co.

May 20, 1993. The representatives met again, along with Falcon Cable Co., and Sweeny EMS. The scenario was then determined and objectives provided by participants. The drill would commence at 6:00 pm on June 3, 1993.

June 1, 1993. A third and final tabletop consisted of final preparations. Participants recorded their expectations of the drill. Public works asked the Fire Department what priority was given to stopping the chemical leak and containing it for cleanup. Preparations were now complete. It was time.

At around 6:00 pm on Friday, June 3, 1993, a phone call reaches the Sweeny Fire Department dispatcher. A major accident has occurred on south FM 524 near Anderson Lumber Co. The alarm then sounds. Within minutes the Sweeny Volunteer Ambulance and Fire Department Units race to the scene. Soon after, Fire Chief Benny Hock arrives and is immediately informed that an 18-wheeler has collided with a motor vehicle. The collision has ruptured the tank the truck was hauling and a hazardous/toxic substance was leaking. There were also injuries or possible fatalities in both vehicles.

The Fire Chief orders the EOC (Emergency Operations Center) to be opened since evacuation of the area is highly probable. Moments after this order is given, the EOC team arrives, consisting of Mayor Larry Piper, City Administrator Exa Mae Keller, Police Chief Jerry Murphy, and Old Ocean Fire Chief Craig Peterson. Emergency Management Secretary Maria Bushe, Director of Public Works Tim Moss, and Cable Television Liasion are also present.

Before action could begin on the chemical, the city needed to know what it was. The placard number, NO. 1145, GUIDE 26, identified it as CYCLOHEXANE. Mayor Piper then orders the immediate evacuation of the area. Police and Fire units at the scene go door to door and use public address systems to evacuate the immediate area. The Mayor attempts to use the cable television interrupt system to warn citizens of the emergency and to begin evacuating. The system refuses to function. A lightning strike earlier in the week has knocked the system off line. Other methods would have to suffice.

Using bunker gear and scott air packs, the emergency rescue team succeeds in stopping the chemical leak from the tank truck (a 3" valve had been padlocked partially open and firemen had to cut the lock to stop the leak).

Public works is notified that the chemical has reached a drainage ditch that is 100 yards long. The ditch crosses under FM 524 and connects with a railroad ditch full of water. The Director of Public Works quickly dispatches a backhoe operator to the scene with sand in order

to dam the ditch before the spill can cross under the road. The operator did not have experience with air packs, though. Another Public Works staff member is also on the Fire Department, and meets him at a safe distance to construct the dam. Great care is taken to block the spill's progress since the chemical is a fire hazard and pollution hazard should it reach the sewer or water system. Sweeny's public water supply is provided by three wells. The spill endangers all of them. Should the wells become compromised, the city would be without potable water. The city is prepared, though. A local vacuum truck service arrives and pumps the chemical from the ditch. The Texas Water Commission and the United States Environmental Protection Agency are contacted regarding any additional protection measures that should be taken to safeguard the city's water supply.

The city emergency response teams soon have the scene under control. Their job, however, is far from over. Firemen and EMTs begin removing victims from the wrecked vehicles with the Jaws of Life (cars were furnished by local salvage yards), police and public works detour traffic around the site, and ambulances, begin taking the injured to the hospital (the injured were played by the high school drama club, complete with make-up and "symptoms"). Hospital staff provide triage as multiple injuries, and even fatalities, test the action plan to its limits. To really complicate matters, parents and friends of the injured press for information on the victims (all played the high school drama class).

Wellhead Protection Program Contingency Plans Available

The city of Rockdale, Texas has provided the Commission with a copy of its Wellhead Protection Contingency Plan. Because of their generosity the TWC has been given permission to distribute free copies to interested systems. For more information, please contact Dave Terry at the TWC, (512) 463-8266.

When it is all over, Sweeny's emergency response plan has succeeded in arresting the leak, containing the spillage, protecting the drinking water supply, getting residents out of harm's way, and getting the injured proper medical attention. It is over at last.

June 4, 1993. The time had come to review the incidents of the previous day and critique the performance of the city departments in the emergency. Each participant addressed the objectives set and success or failure in reaching them. It was unanimously agreed that the drill provided each department valuable experience. In fact, the first remark during the critique was, "this is not meant to embarrass anyone, or any department."

Probably the most positive part of the exercise was the communication. New equipment had previously been installed in the EOC, city vehicles, fire vehicles, and police vehicles. This is very important because it allowed, for the first time, all agencies to talk with each other during an emergency.

"Our city, like many others, is subject to tank trucks on our streets any hour of the day. A railroad passes within a city block of city water wells. What was a drill could have been the real thing. Ground water protection is one of the most important things a city can do for its citizens. This is the first drill the city of Sweeny has done, regarding ground water protection, but after finding out all the things we don't know, it won't be the last.

Tim Moss
Director of Public Works
City of Sweeny, Texas

The TWC's Wellhead Protection Program wishes to comment the city of Sweeny for its commitment to it citizens and dedication to the ideals of a ground water protection plan. A lot of planning, blood, sweat, and tears went into this drill. While the city identified, by its own admission, some areas that needed improvement, they also demonstrated that if the phone rings at 4:00 in the morning the city can respond decisively.

Now comes the $64,000 question: *can yours?*

GOLD MINING AND WATER QUALITY

Carole Mackin, WQB

To understand the impacts of gold mining on water quality, three things must be considered 1) the chemistry of the processes, 2) the minerals in the ore, and 3) the mining operations. The chemistry is fundamental--acid/base and oxidation reactions. The minerals are familiar--pyrite, commonly called "fool's gold," and calcite, commonly called "limestone." The mining operations are also fundamental--deciding what rock is economical to process for gold and what rock is not.

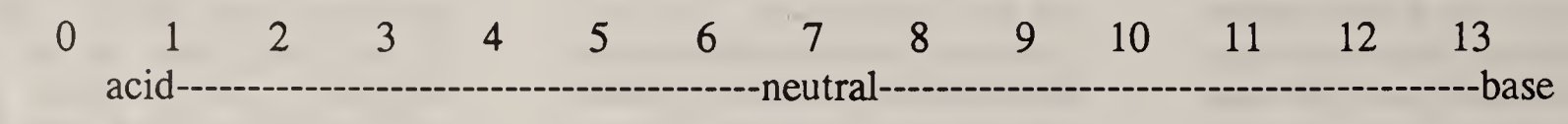
CHEMISTRY

Acid/Base Reactions. Everyone is familiar with acid/base reactions from everyday life. Ice tea tastes better to many people if it is acidified with lemon juice. Aspirin is buffered to reduce its acidity so it won't upset your stomach. Draino is used so the caustic (basic) chemical can dissolve a clog in a drain.

When equal portions of an acid is mixed with a base, the solution is neutralized. A simple acid/base reaction is shown below: a positive hydrogen ion (acid) and negative hydroxide ion (base) combining to form a molecule of neutral water.

$$H^+ + OH^- \rightleftharpoons H_2O$$

Acidity is measured on the pH scale. The lower the pH the more acid the solution.



Many substances can buffer an acid or a base and maintain a pH near the neutral range (pH from 6 to 8). **The important thing to remember about acid/base reactions is that compounds are not changed substantially in the reaction and the reaction is easily reversed by neutralizing or buffering the solution.**

Oxidation Reactions. Burning is a common oxidation reaction. People "burn calories" when they exercise; it would be closer to the truth to say they oxidize their fat. Iron rusts when it is exposed to air and water; in scientific terms, iron oxidizes. **The important thing about oxidation is the compounds are totally changed to new substances with different properties from the original compounds, and the reaction is not easily reversed.** A simple oxidation reaction is shown below: the mineral, pyrite, reacts with air and water to form metal ions and sulfuric acid.

$$FeS_2 + O_2 + 2H_2O \rightarrow Fe^{+3} + 2H_2SO_4 + 3e^-$$

MINERALS

When the mineral pyrite is exposed to air and water, it will oxidize over time to form solutions of ferric ions and sulfuric acid. The ferric ions color the water a bright orange-red. The sulfuric acid changes the pH so the water is too acidic for anything to live in it. This is commonly called "acid mine drainage." It is a problem of waste rock dumps and exposed sulfide minerals in mine pits and shafts of the historic mining districts of Montana.

The mineral calcite, which is contained in limestone rock, neutralizes the sulfuric acid as it is formed. So, acid mine drainage may not appear if enough limestone rock is mixed into the waste rock dumps.

Other minerals play a role in either worsening or controlling acid mine drainage. Minerals that make things worse contain heavy metals such as cadmium or lead that dissolve into the acid drainage and further contaminate the water. Minerals that help control acid mine drainage act as buffers. These minerals absorb the acids, hold the pH in the neutral range, and keep heavy metals from dissolving.

MINING OPERATIONS

Gold found with sulfide minerals is commonly extracted with cyanide solutions. The solution is applied to huge piles of ore on heap leach pads, or the ore is pulverized and placed in large drums with the cyanide solution. The gold-bearing cyanide solution is collected, the gold is processed out, and the extracted solution is recycled. Choosing one process over the other depends on how oxidized the ore is.

Cyanide stays in solution only when the pH is in the basic range. If the solution becomes acidic, gold extraction stops because hydrogen cyanide gas bubbles out of the solution and the gold stays in the ore. Oxidized ore does not form sulfuric acid and will not cause the cyanide solution to acidify. Since it is hard to control the pH in a heap leach pad, mines avoid rock that is not oxidized. When rock containing sulfides must be mined to stabilize the side walls of the pit, it is usually placed with the waste rock.

A mine processing ore that is not oxidized uses a series of closed drums where pH can be controlled easily. The extracted slurry goes into a tailing pile where excess solution is collected and recycled back into the extraction drums.

CONCLUSIONS

Proper handling of sulfide minerals is critical in processing gold ore with cyanide solutions and in stopping acid mine drainage. Acid mine drainage is controlled by inhibiting the oxidation of sulfide minerals or neutralizing the acids formed.

Most problems arise from the waste rock, spent heap leach pads, slurry tailing piles, open mine pits and shafts that are left behind when the mining is over. The companies that make the profits should also pay the bills for cleaning up when they leave.

THE MECHANICS OF POSTURE[1]

LIFTING TO AVOID LEVERAGED BACKOUT

About 80% of Americans acquire a back problem at some time in their lives. What's worse, once a person experiences a back problem, there is a 90% chance it will recur. Back injuries are among the most common form of work-related injuries. This is because even moderate forces affect the back during lifting. This article will briefly discuss some common causes of back injury and some easy ways to minimize, or even avoid, **leveraged backout.**

The Body Mechanics, or manner in which our body is shaped and in which forces come to play on parts of our body when we lift objects, illustrate why back injuries happen so frequently. The act of lifting involves a coordinated sequence of lever arms and fulcrums, in which one set may act as the weak link in the chain.

The human back consists of a series of 17 circular stacked bones (vertebrae) connected to several minor and major muscle groups by connective tissue attached to small projections on either side of the vertebrae. This arrangement gives us the ability to twist and bend the torso to varying extents in any direction.

The Job of Lifting is also accomplished by this network of muscle, bone and cartilage. This, unfortunately, works at a large mechanical disadvantage to the back because of the relatively small area where the vertebrae connect to the muscles. The allowable stress that the interconnecting cartilage is subjected to is therefore much more limited than that of any other comparable part of the body. Although human tendons can withstand stresses exceeding 1500 psi, the cross-sectional area of vertebral connective tissue may be no larger than 0.05 sq in., which puts an upper limit of perhaps 75 lb on each vertebrae. The attached muscles also have limits.

Leveraged Backout can occur from an improperly-lifted weight of only 20 lb or so, straining small muscles in the lower back, resulting in immediate discomfort, numbness in one or both legs, and chronic pain (*sciatica*). Still, this is much preferred to a crushed or slipped vertebral disk, although the level of pain involved may the same. A common example of disk failure in the lower lumbar vertebrae during lifting; the disk cartilage is simply crushed under the weight transmitted down through the backbone, with excess material "squashed" out from between adjacent vertebrae. This material may exert pressure on surrounding muscle tissue, even the spinal cord itself, causing severe pain. Surgery is usually the only remedy for this type of damage, sometimes requiring replacement with artificial materials such as plastic.

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[1]Based on "The Mechanics of Posture", Operations Forum, Water Environment Federation, pp. 26-27, Dec. 1993.

Lifting Effectively means that the force of the weight is carried straight down through the spinal column and evenly distributed among the vertebral disks. That is why you should keep your back straight when lifting so that the muscles are not straining against twisting forces. **Poor Leverage** amplifies the load on the muscles, making it easy to strain the back during even moderate lifting. Heavy lifting can result in injury if only a slight mistake is made.

The Human Back has been called both an engineering marvel and one of nature's greatest blunders. All other mammals spend most of their time on all fours, thus distributing their weight and the forces of their exertions away from the backbone and surrounding muscles. Although nature seems to have compromised us to some extent on our backbones, it has also given us the **Brains** to use our backs wisely.

Practical Advice based on the wealth of painful experience that we have gained since we first stood erect, is offered here in some simple and effective ways to **Minimize the Risk of Back Injury:**

- Always **Test** an unfamiliar weight **Before** attempting to **Lift** it.
- Keep your **Feet** about a shoulder's width **Apart** when lifting **For Balance.**
- **Bend** at the **Knees and Hips, Not** at the **Waist.** This will place most of the stress on your leg and torso muscles rather than on your back.
- Just **Before Lifting, Take** a moderately deep **Breath** and **Tighten** your **Stomach** muscles.
- **Lift Smoothly** and avoid jerking during the lift.
- **Hold the Load Close, Waist High** to your body to reduce the force on the back.
- **Turn With the Feet,** not from the waist, to **Avoid** a **Twisting** motion on the **Back.**
- **Exercise Regularly** to keep your body's muscles in tone.
- **Don't** try to **Lift** a heavy weight **If** you're **Angry** or emotionally distraught.

Awareness and Proper Lifting Habits are the keys to preventing back injuries. We probably are all acquainted with someone who has had some kind of back injury; we also probably know that the resulting impairment can last anywhere from several days to years or for the rest of our lives. Even after the back injury has healed, the involved tissues rarely regain their former strength and are prone to re-injury. The best and safest strategy is to **Avoid Back Injury** altogether. **Safe Lifting is a function of both the Amount Lifted and the Lifting Technique used. Preventing back injuries is much more effective (and certainly less painful) than treating them.**

SHARING WATER/WASTEWATER EQUIPMENT:
A STRATEGY FOR PROMOTING VIABILITY OF SMALL PLANTS

Sharing things with our neighbors is an honorable tradition that is often seen as a form of charity. But sharing can be more than doing good deeds. Often it is an efficient and rational use of resources that lowers costs for those involved. The operators of small water and wastewater plants have always recognized this fact, given their need for specialized tools and equipment that may be used only occasionally. There are probably hundreds of plants across the country that borrow items from each other from time to time. In many cases organizations such as the Rural Water Associations facilitates such borrowing by acting as intermediaries between towns. There are also local and regional operators' groups that maintain directories of items that member plants are willing to loan to each other. For the most part, however, these arrangements remain very informal, and depend on personal relationships developed over the years between colleagues.

Partnerships for sharing equipment can help small systems achieve viability and regulatory compliance, and deserve to be implemented on a wider and more formal basis. Following are some suggestions for state governments to help water and wastewater professionals establish or formalize sharing arrangements with their neighbors.

Getting started. The first step is to approach communities in a given area to see if there is interest in the concept. Gauge the level of interest through letters, phone calls or, better yet, personal visits. Set up a meeting of community leaders and system operators to discuss the idea. If the group is receptive, schedule a second meeting to set policies and procedures. Work through the local operators' association, if one exists. Plant operators may not have the authority to enter into such an arrangement on their own, and the appropriate approvals (town board, etc.) should be obtained, if necessary. All the participants must be committed to making the venture work, and must agree on the format and policies that will govern the partnership (see below for issues to consider).

The next step is to prepare an inventory of the equipment that will be available for borrowing. It's probably best to assign this task to a committee, which can send someone to visit each facility in the group and record the necessary information on a standardized form. (Alternatively, each plant can submit its own list to the committee, but this may take longer, as this is the type of task that is easy to put off when faced with the press of daily operations.) Remember, the partners are not obligated to put everything they have on the list. The staff of each plant decides what to make available, and if for any reason they wouldn't feel comfortable lending a certain item, they simply leave it off the list. Also, each plant has the right to put conditions on the lending of an item. For example, if plant personnel use an item frequently themselves, they may want to limit the length of time for which they will lend it; with some types of equipment, they may decide to require that their own operator go with it (Note: For insurance reasons, this may be a good idea for motorized vehicles and heavy equipment. Every community should check with its insurance carrier about its requirements.)

Items should be organized by category, and each listing should include the following: name and address of the owner, name and phone (day and emergency) of the person authorized to lend the item; and special conditions, if any.

Breakage. What happens if someone borrows something and it breaks? Clear policies on this issue should be drawn up and ratified at the outset. Usually the borrower is held responsible for repairing, or paying for repairs to, an item that breaks while in the borrower's possession. Exceptions to this rule should be made in cases where the breakage is due to normal wear and tear. The lender should inform the borrower of any known problems, special operating requirements, or other idiosyncracies of the equipment. The borrower should inspect the item upon receipt, and may elect to return it unused if it does not appear to be in good working condition.

Loan period. There are two ways to approach the question of borrowing time. One is to set a standard time for each category of equipment. Another is to leave it to the borrower and the lender to decide on a case-by-case basis. If the latter method is used, it's important to be realistic about how long the equipment will be needed. The borrower shouldn't promise to return an item in three days if the job might take five.

Pick-up and return. This is normally the borrower's responsibility, but the lender may be willing to take an item to the borrower, or to meet the latter at some convenient point between the two plats. Obviously, geography must be considered when setting up the partnership. Plants that are far apart will probably not be able to share very often. Of course, even a distant plant can be a valuable partner, depending on the importance and scarcity of the items that it has to offer.

Scheduling. The general rule is that the owner has preference over borrowers. In cases of multiple requests for the same item during overlapping time frames, the "first come, first served" principle applies. Exceptions should be made for true emergency situations. The plant with the emergency should make arrangements with the current custodian of the equipment as well as the owner (i.e., no secondary borrowing without the owner's permission).

Disputes and governance. Even when everyone thinks they are playing by the rules and acting in a fair and responsible manner, disputes can arise over damages, scheduling conflicts, overdue items, and a host of other issues. If the parties directly involved cannot amicably resolve their differences, then some impartial arbitrator may need to intervene. Even when a group has written policies, it may still need some sort of governing body to interpret and apply these rules. It is therefore important to decide at the very beginning what the process will be for handling disputes.

Borrowing vs. renting. It's great if one plant can give another the use of an item at no charge-especially for the borrower! However, there may be pieces of equipment that plants are reluctant to lend but would consider renting out for a modest fee. Of course, when money changes hands things become more complex. The partners may choose to avoid these issues by limiting their group to lending and borrowing, but should they decide to include rental arrangements, they must make sure that the policies are clear and cover every contingency they can think of. Owners will also need to determine the real cost of renting out a given item so that they don't end up losing money. For example, they'll need to take into account depreciation, who pays for fuel, when the rental period starts and ends, etc.

Perhaps the most important thing to remember is that the success of any sharing arrangement ultimately depends on cooperation among the participants. Formal structures and explicit policies can help prevent misunderstandings, but there is no substitute for good will and common sense.

The telephone experience

Written for METC by John Camper, Camper Communications

On the telephone, first impressions are formed within the first 30 seconds, and of course, they could be wrong. People who seem warm when you meet them sometimes turn into an ice berg when they pick up a telephone. They don't mean to be that way, its just something that happens when they can't see the person they are talking to. How can you overcome the first negative telephone impression you may give? A good beginning is to answer the telephone properly. Start by pronouncing the name of your organization distinctly.

Mispronouncing the name of the organization or agency is as bad as misspelling it in correspondence. Slurring the name or using acronyms that mean nothing to anyone else leads to a poor impression, not only of the person on the telephone, but the entire organization. To the person on the other end of the line you ARE the organization. always identify yourself when you answer the phone.

Most of us don't know how we sound on the telephone. Most of us don't know how we sound in person for that matter. If you haven't heard yourself on the telephone; I suggest you get someone to record you when you don't know you are being recorded. Listen to how you sound, and look for five things especially alertness, expressiveness, naturalness, distinctness, and pleasantness.

Be alert. Don't let yourself sound disinterested or sleepy. Talk as though this were a part of your job that you like the most. Remember that although you have answered the telephone many times, it may be the first time that that person has talked to you.

Be expressive. Don't talk in a monotone. Get some expressiveness into your voice. If you talk in a monotone it makes you sound like a machine and certainly of someone who cares very much about the job or the office.

Be natural. Now, I said you shouldn't talk in a monotone, but by the same token, you want your voice to sound natural, not forced or over-dramatic. Leave the theatrics to the stage, not the office.

Be distinct. Remember to speak distinctly. Speak distinctly even when you are relaying simple information that everyone would understand. Talk the listener's language and avoid jargon that you understand, but that others may not.

Be pleasant. Put a smile in your voice. The feelings you have will generally come through on the telephone unless you make a conscious effort to hold them back. The other four things I mentioned can be overcome if you will simply put a smile in your voice. Listeners sense the smile in your voice.

Other important elements of telephone expertise are tone and volume of your voice. Some people have very low voices and can be very hard to understand when they talk on the phone. I have a tendency to talk much louder when I talk on long distance and that can present problems for the person at the other end. Very high voices can be hard to understand also. If you have either one of these problems, try to modify your speech just enough to make it easier to hear. If you will sit up straight and talk more from the chest or diaphragm than from the throat, you can comfortably lower your voice a little.

Try to answer the telephone on the second ring, even if you must then ask permission to put the caller on hold. It really can be frustrating to call a number and have that line ring and ring. But, let the telephone ring once to settle your thoughts and shift gears from what you were doing to what you are going to be doing. I have had people who were obviously counting something, come on the telephone on first ring and answer it, "65, 66, 67".

But, back to the poor soul you asked to hold the line while you completed something else. When you get back on the line, apologize for the wait. Use the "one minute hold" rule here. The one minute hold rule is simply, don't put anyone on hold for more than one minute without getting back to the caller, and don't stay on hold yourself more than one minute without hearing from someone. You are wasting time otherwise.

Personalize the call. Callers like to know that we know their names. Whenever you pick up the phone, pick up a pencil with it. Jot down the name of the caller as soon as you hear it. Then during the conservation, use the name. Try that on outgoing calls also.

Apologize and explain delays and errors. If you have kept the person on hold while you looked something up, come back with "Sorry I kept you waiting; I have that information now" or at least, "Sorry I kept you waiting". If you are confronted with an irate person complaining about something, don't get defensive. Take the time to fully explain what happened and why it happened. If you don't know the answer, tell them you don't and that you'll get back with an answer (and be sure that you do). Never fall back on something like, "It's our policy".

In the next article we will discuss taking and leaving complete messages in order to save time and increase telephone efficiency.

John Camper is co-owner of Camper Communications, a management consulting firm in Helena, Montana. His firm specializes in staff development and public and customer relations.

Water Quality Bureau
Department of Health and
Environmental Sciences
1400 Broadway
P. O. Box 200901
Helena, Montana 59620-0901

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